

BEAUTY AND THE BEAST: ART AND SCIENCE IN EARLY MODERN EUROPEAN EQUINE IMAGERY¹

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ABSTRACT

This article analyses artists' manuals and veterinary texts in order to understand some of the assumptions attending the production of art and the practice of science in early modern Europe. These sources, several of which have remained largely unstudied, share a similar focus on the horse: how artists can best render them and how horse-owners and stable-masters can best care for them. The article considers these sources within their artistic, scientific and hippological contexts, but pays special attention to how the discursive practices of art and science overlap. The artists' manuals promote mathematically oriented techniques and aesthetics, while the illustration to the veterinary texts are fundamentally informed by artistic and iconographic traditions. Art and science thus mutually elucidate each other while simultaneously highlighting the social and economic importance of the horse in early modern history.

No animal is more noble than the horse since it is by horses that princes, mag-nates and knights are separated from lesser people and because a lord cannot fittingly be seen among private citizens except through the mediation of the horse.²

– Jordanus Ruffus (d. 1256)

In order to sustain political societies, and in order to preserve and protect the people who make up these societies, you cannot do without the horse.³

– Peter Offenbach, 1603

I. Introduction

Some of the most famous works of art produced in early modern Europe by such artists as Leonardo da Vinci, Michelangelo, and Albrecht Dürer all have a common subject that provided material for discussion not

¹ I would like to thank my colleagues Peter Foley, Sheila Pitt and Corine Schleif for their critical comments and encouragement.

² Jordanus Ruffus, *Jordani Ruffi Calabriensis Hippiatria*, translated and cited in R. Davis, *The Medieval Warhorse* (London, 1989), 99.

³ Peter Offenbach, introduction to Carlo Ruini, *Anatomia & Medicina Equorum Nova Das ist neues Rossbuch oder von der Pferden Anatomy/ Nature/ Cur/ Pflege und Heylung*, Frankfurt, 1603, ii verso: "Und daß man also zu Erhaltung politischer Societeten/ zu Erhaltung und Beshirmung deß Menschen derselbigen nicht sehr wol [dem Pferd] entrahten unnd entbehren koenne." All translations, unless otherwise stated, are mine. This exemplar is located in Wolfenbüttel, Herzog August Bibliothek (= HAB) 15 Bell. 2°.

only among early modern artists, but among humanists and scientists as well. This subject was used in early modern cultural production to symbolize such important and diverse concepts as a political state, social nobility, and unbridled lust. This multifaceted subject is the horse. Images of horses feature prominently in the canon of art history. Equestrian portraits, such as Leonardo's drawings for a monument honoring Francesco Sforza,⁴ Donatello's bronze sculpture of Erasmo da Narni,⁵ Paolo Uccello's fresco commemorating Sir John Hawkwood,⁶ Hans Burgkmair's woodcut of Emperor Maximilian I,⁷ and Titian's painting of Charles V at Mühlberg⁸ all belong to this canon. Similarly, important battle-scenes, such as Leonardo's drawing of the battle of Anghiari⁹ and Uccello's paintings of the rout at San Romano,¹⁰ feature horses as integral components of warfare. In works of art with religious subject matter, horses also function as necessary iconographic signifiers, for example as a kind of attribute to Saints George, Eustace and Martin, and as a key indi-

⁴ Leonardo da Vinci, 1452-1519. The drawings, dating from c. 1489 to c. 1493, are found in several different libraries and museums, including the Royal Library at Windsor Castle and the Biblioteca Nacional in Madrid. See *Leonardo da Vinci's Sforza Monument Horse: The Art and the Engineering*, ed. Diane Cole Ahl (Lehigh and London, 1995).

⁵ Donatello, c. 1390-1466. His sculpture of Erasmo da Narni (a.k.a. Gattamelata), c. 1445-53, is in the Piazza del Santo in Padua; see Bonnie Bennett and David Wilkins, *Donatello* (Oxford, 1984), 176-182. For other sources on equestrian tomb monuments, see Horst W. Janson, "The Equestrian Monument from Cangrande della Scala to Peter the Great," in *Aspects of the Renaissance: A Symposium*, ed. Archibald Lewis (Austin, 1967), 73-85; Erwin Panofsky, *Tomb Sculpture: Four Lectures on its Changing Aspects from Ancient Egypt to Bernini* (New York, 1964), 83-85; Dario Covi, "The Italian Renaissance and the Equestrian Monument" in *Leonardo da Vinci's Sforza Monument Horse*, 40-56; Virginia Kaufmann, "The Magdeburg Rider: An Aspect of the Reception of Frederick II's Roman Revival North of the Alps," in *Intellectual Life at the Court of Frederick II Hohenstaufen* (Studies in the History of Art 44; Center for Advanced Study in the Visual Arts Symposium Papers XXIV), ed. William Tronzo (Hanover and London, 1994), 63-88.

⁶ Paolo Uccello, 1397-1475. The fresco was completed in 1436 and is located in the Florence Cathedral. See John Pope-Hennessy, *Paolo Uccello: The Complete Edition*, 2nd ed. (London, 1969 [1950]), 140-1, pls. 12-15. For an unusual Renaissance painting commemorating a woman by depicting her astride a horse, see Beth Holman, "Exemplum and Imitatio: Countess Matilda and Lucrezia Pico della Mirandola at Polirone," *Art Bulletin* 81 (1999), 637-64.

⁷ Hans Burgkmair, 1473-1531. The woodcut is from 1508; one especially fine copy, printed on vellum, is in the Department of Prints and Drawings at the Art Institute of Chicago. See Larry Silver, "Shining Armor: Maximilian I as Holy Roman Emperor," *Museum Studies: The Art Institute of Chicago* 12 (1985), 8-29.

⁸ Titian, c. 1490-1576. The painting of Charles V from 1548 is in the Prado in Madrid. See Charles Hope, *Titian* (London, 1980), 110-12.

⁹ 1503-6; the original drawing has been lost but Leonardo's composition and design are known from a copy made by Peter Paul Rubens, c. 1615, in the Louvre. See Martin Kemp, *Leonardo da Vinci: The Marvelous Works of Nature and Man* (London, 1981), 234-37.

¹⁰ The panels are located in the Uffizi Gallery in Florence, the National Gallery in

cator in the narrative of Saul's conversion.¹¹ Art historical analyses have examined works like these within the contexts of their artists, materials, patrons and audiences.

Such contexts are crucial for the understanding of particular facets of art production. But the very assumptions inherent in choosing these contexts necessarily lead the historian to inquire after artists, patrons and works that already have well-established identities, and thus, ultimately, to substantiate the teleology of traditional art history based on personal and aesthetic greatness. Works whose artists and/or patrons are completely unknown, or that fail to inspire aesthetic pleasure, however defined, remain beyond the vision and ken of traditional contexts. Yet the field of early modern art production is full of such works. To dismiss a vast resource on the grounds that it does not fit within a narrow methodological scope is surely to forego a potentially rich harvest of further understanding and leads one to question the exclusive use of such a methodology and its attendant contexts.¹²

In regarding these canonical images that feature horses, few historians have considered the contexts of the horse beyond its most basic function of signification as noble mount, battle steed, or narrative necessity.¹³ Are there, in fact, any other contexts, and if there are, do they matter? Is there a place for the study of animals and their cultural representation in historical discourse, and if so, where? And finally, can

London, and the Louvre in Paris. The dating of the three panels by Uccello which depict various moments in the battle is disputed. Gebhardt argues for a date somewhere between c. 1440 and the 1450s: Volker Gebhardt, *Paolo Uccello: Die Schlacht von San Romano* (Frankfurt am Main, 1995).

¹¹ Images of these saints and their horses abound in early modern art. A few examples would be Albrecht Dürer's engraving of St. Eustace, c. 1501; Rogier van der Weyden's painting of St. George and the dragon, c. 1435 (National Gallery of Art, Washington, D.C.); Hans Mielich's Ligsalz Epitaph depicting both St. Martin and Saul, 1550 (Munich, Frauenkirche), and Parmigianino's painting of the conversion of Saul, 1527 (Vienna, Kunsthistorisches Museum). For an iconographically unique image of St. Christopher carrying the Christ-child while mounted on a horse, see the engraving by Master I.A.M. of Zwolle reproduced in *The Illustrated Bartsch*, vol. 8, ed. Jane Hutchison (New York, 1980), 206.

¹² For a concise and cogent critique of art history as based on aesthetic essentialism, and for a persuasive argument for viewing neglected images with alternative methodologies (specifically a semiotic analysis of sixteenth-century illustrated broadsheets), see Keith Moxcy, "Introduction" in *Peasants, Warriors and Wives: Popular Imagery in the Reformation* (Chicago and London, 1989), 1-9.

¹³ The exception to this are the following: Laura Camins, *Glorious Horsemen: Equestrian Art in Europe 1500-1800* (Springfield, MA, 1981); Alexander Mackay-Smith, Jean Druesedow and Thomas Ryder, *Man and the Horse: An Illustrated History of Equestrian Apparel* (New York, 1984); and Walter Liedtke, *The Royal Horse and Rider: Painting, Sculpture and Horsemanship* (New York, 1989). These volumes with immensely valuable visual and bibliographic

such study aid the historian in understanding works and phenomena that have been previously ignored?

Alternative trajectories recently pursued in historical practice have widened the scope of scholarly inquiry and have proven particularly fruitful. The study of both microhistory (a term from the field of history) and visual culture (from art history) involves a questioning of historiographic and heuristic protocols which designate a priori that which is appropriate (i.e. sufficiently important, representative, central, and foundational; for art, of sufficient aesthetic quality and inherent greatness) as a topic of investigation.¹⁴ This critical stance simultaneously embraces the readiness to take seriously those phenomena that have previously been relegated to the margins of scholarly discourse. Such a readiness takes its cue from an understanding of the historian's work as involving the construction of contexts, a process that is as heuristically necessary as it is necessarily pluralistic. In daring to study subjects and construct contexts otherwise considered beyond the pale, historians not only directly confront and thereby fully recognize the epistemological limitations imposed by such protocols of appropriateness, they also gain fresh and often unexpected insights into their field of study. According to such a theoretical model, serious consideration of the horse in early modern visual culture would seem rich with potential. Although marginal indeed in the twenty-first century, the horse in the Middle Ages and early modern period was absolutely central in some of society's most basic activities: agriculture, industry, trade, warfare, social differentiation, and recreation. Exploring the contexts of the horse thus offers an opportunity to access crucial aspects of early modern life and culture from a perspective as historiographically unique as it is historically pivotal.

In addition to the emphases on microhistory and visual culture, recent analyses of the concepts of nature and science provide inspiration for the study of the horse. In dealing with such aspects as the collecting or classifying of natural specimens, as well as the production of landscapes in art, scholars have argued persuasively that nature in many ways is a cultural construct, one that is historically mutable and ideologically

information appeared in conjunction with museum exhibits and provide a useful springboard for further scholarly investigation.

¹⁴ For microhistory, see Florike Egmond and Peter Mason, "A Horse Called Belisarius," *History Workshop Journal* 47 (1999), 241-52. For visual culture, see *Visual Culture: Images and Interpretations*, ed. Norman Bryson, Michael Ann Holly and Keith Moxey (Hanover and London, 1994).

freighted.¹⁵ What constitutes nature, and how it is made knowable, are profound categorical and epistemological issues that are articulated in each cultural instance according to historically specific structures of thought and assumption. Investigating ways in which people thought about the horse is in fact to investigate how people thought about science, technology, art, nature, gender, discipline, social stratification and political power.¹⁶

This article deals specifically with the areas of art and science. Several different kinds of sources are to be used: manuals written by and for artists instructing them and their pupils on the correct way to fashion equine imagery; and treatises on equine health-care, anatomy and conformation. Most of these printed sources are illustrated, at least on their title-pages, and most of them have received little attention, scholarly or otherwise. Art historians have not troubled themselves to look seriously at what might be labeled aesthetically challenged illustrations; since these do not constitute art in the sense of a universally recognized feat of aesthetic superiority, such illustrations fall beyond the purview of traditional art history. Historians of science have ignored these treatises on the assumption that the image merely illustrates the text or because the text itself is regarded as old-fashioned and incorrect in terms of later discoveries and techniques.¹⁷ However, sources deemed frustratingly mute when interrogated about the subject of Truth, either in its aesthetic or scientific dimensions, can be remarkably loquacious,¹⁸ if asked the right

¹⁵ See for example Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (Berkeley and London, 1994); Harriet Ritvo, *The Platypus and the Mermaid and Other Figments of the Classifying Imagination* (Cambridge, MA and London, 1997); Londa Schiebinger, *Nature's Body: Gender and the Making of Modern Science* (Boston, 1993); Martin Warnke, *Political Landscape: The Art History of Nature*, transl. by David McClintock (Cambridge, MA and London, 1995 [1992]).

¹⁶ Similarly, Sophia Menache has analyzed ways in which social, cultural and religious assumptions have been projected onto dogs; see S. Menache, "Dogs and Human Beings: A Story of Friendship," *Society and Animals* 6 (1998), 67-86; and idem, "Dogs: God's Worst Enemies?" *Society and Animals* 5 (1997), 23-44. My thanks to Heiko Oberman for drawing my attention to Menache's work.

¹⁷ For a similar and critical assessment of the state of scholarship for such illustration, see Samuel Edgerton Jr., "The Renaissance Development of the Scientific Illustration" in *Science and the Arts in the Renaissance*, ed. John W. Shirley and F. David Hoeniger, (London and Toronto, 1985), 168-197. Edgerton's thoughtful essay, unlike the current study, is still concerned with the aesthetic quality of the image.

¹⁸ By this analogy, I do not mean to imply that the role of the historian is that of a ventriloquist. Yet the very fact that each historian chooses which questions to pose, and thus prompts the material to speak in certain ways, points not only to the influence of specific methods and theories but also to the historian's own subjectivity. I also do not mean to imply that the narratives these sources tell are necessarily straightforward or that they provide a clear and undistorted window on the past.

questions, about a surprising array of topics, particularly about early modern assumptions regarding the production of art and the practice of science.

II. *Art: A Scientific Aesthetic*

One of the defining characteristics of early modern painting and graphics is the use of one-point or linear perspective, a mathematically based formula for creating a convincing illusion of three-dimensional space on a two-dimensional surface.¹⁹ Artists such as Leon Battista Alberti, Piero della Francesca, Leonardo da Vinci and Albrecht Dürer all wrote treatises on perspective.²⁰ The apparent delight derived by artists who learned to manipulate perspective is anecdotally illustrated by Giorgio Vasari, the sixteenth-century artist and writer whose biographies of his predecessors and colleagues helped provide the foundation for art history. According to Vasari, the Italian artist Paolo Uccello was so enamored with the technique that he preferred the pleasures of perspective to those of the marriage bed.²¹ Scholars have examined this applied mathematical technique under many rubrics, including its potential for symbolic, psychological and metaphorical signification.²² In some ways, the use of

¹⁹ My use of the term "perspective" in the following discussion refers to this kind of mathematically derived technique and should not be confused with other forms, such as "atmospheric perspective" which does not involve geometry but the use of color to suggest spatial recession. See Samuel Edgerton Jr., *The Renaissance Rediscovery of Linear Perspective* (New York, 1975).

²⁰ Leon Battista Alberti's (1404-1472) notes on perspective can be found in: L. Alberti, *On Painting*, rev. ed., transl. John Spencer (New Haven, 1966 [1436]). Piero della Francesca's (c. 1415-1492) treatise *De prospectiva pingendi* was written in c. 1485; Leonardo da Vinci wrote about perspective in his various notebooks. For Piero and Leonardo, see Elizabeth Holt, *A Documentary History of Art*, vol. I (Princeton, 1981) 253-267 and 270-286 (see also note 32). For Albrecht Dürer (1471-1528), see Erwin Panofsky, *Dürers Kunsttheorie* (Berlin, 1915) and *Albrecht Dürer: Schriftlicher Nachlaß*, ed. H. Rupprich, 3 vols., (Berlin, 1956, 1966 and 1969). In a letter to his friend and sponsor, Willibald Pirckheimer (1470-1530), dated in October 1506 and written in Venice, Dürer mentions that he would like to go to Bologna because there is someone there who has agreed to teach him the secrets of perspective: "Dornoch würd ich gen Polonia reiten under Kunst willen in heimlicher Perspectiva, die mich einer lehren will" quoted in *Albrecht Dürer: Schriften und Briefen*, ed. Ernst Ullmann (Berlin, 1984), 118.

²¹ Giorgio Vasari, *Lives of the Artists*, vol. I, trans. George Bull (London, 1965 [1568]), 104: "[...] Paolo used to stay up all night in his study, trying to work out the vanishing points of his perspective, and [...] when [his wife] called him to come to bed he would say: 'Oh, what a lovely thing this perspective is!'"

²² See for example Erwin Panofsky, *Perspective as Symbolic Form*, trans. Christopher Wood (New York, 1991 [1927]); E.H. Gombrich, *Art and Illusion: A Study in the Psychology of*

perspective has become a touchstone in art history for artistic greatness; those artists who knew about it and used it early on are amongst the most lauded. Efforts have even been made to prove that those canonical artists not recognized previously for their implementation of perspective actually did use at least some form of it.²³

Whether or not the presence of one-point perspective really does provide a reliable standard of greatness, it certainly did bear the cachet of marketability. If one considers, for example, the production of sixteenth-century books printed in Germany, an interesting corpus emerges of texts that deal with perspective and with related mathematically-based phenomena such as measurement and proportion. Many of these books were written by artists and are related to the production of art. A subset of these books deals specifically with the rendering of horses. What perhaps began in artistically elite circles in Italy was enthusiastically embraced in Germany and not just by Albrecht Dürer. Other artists such as Erhard Schön,²⁴ Sebald Beham,²⁵ and Heinrich Lautensack,²⁶

Pictorial Representation (Princeton, 1969); Michael Kubovy, *The Psychology of Perspective and Renaissance Art* (Cambridge, 1986); James Elkins, *The Poetics of Perspective* (Ithaca and London, 1994). See Elkins for a particularly extensive bibliography on the many facets of perspective. He also makes the important argument that ways of thinking about and of constructing perspective in the Renaissance were emphatically not monolithic but instead embraced a range of ideas and techniques.

²³ For example, D. Carleton, "A mathematical Analysis of the Perspective of the Arnolfini Portrait," *Art Bulletin* 64 (1982), 118-124, which argues that Jan van Eyck used the mathematically based theory of elliptical perspective.

²⁴ Erhard Schoen (c. 1491-1542), *Underweisung der Proportion und stellung der bossen, ligent und stehend, abgestolen wie man das vor augen sicht, in dem büchlein, durch Erhart Schön von Nürnberg für die Jungen gesellen, und Jungen zuo unterrichtung die zuo der Kunst lieb tragen, und in den druck gebracht*, Nuremberg, 1538. The 1542 edition of Schoen's book is reproduced in *The Illustrated Bartsch*, vol. 13, pt. 1, ed. Walter Strauss (New York, 1981), 139-176. See also Gerlind Werner, *Nützliche Anweisungen zur Zeichenkunst: Illustrierte Lehr- und Vorlagenbücher* (Kataloge des Germanischen Nationalmuseums, Nürnberg; Bestandsverzeichnisse der Bibliothek des Germanischen Nationalmuseums, vol. I) (Nuremberg, 1980), nr. 8.

²⁵ Sebald Beham (1500-1550), *Dises buchlein zeyget an und lernet ein maß oder proporcion der Ross/ nützlich iungen geselen/ malern und goltschmide*, Nuremberg, 1528 (Wolfenbüttel, HAB, Nb 123); and *Sebalden Behems Kunst und Lehrbuchlin/ Malern unnd Reissen zu lernen/ Nach rechter Proportion/ Maß und aufteilung deß Cirkels. Angehenden Malern unnd Kunstbaren werckleuten dienlich* [1546], Frankfurt, 1562 (Munich, Staatsbibliothek [= Staabi.], Rar. 693). See Gustav Pauli, *Hans Sebald Beham: Ein kritisches Verzeichnis seiner Kupferstiche, Radierungen und Holzschnitten* (Strasbourg, 1901), 432f.

²⁶ Heinrich Lautensack (1522-1568), *Des Cirkels unnd Richtscheits/ auch der Perspectiva und Proportion der Menschen und Rosse/ kurtze/ doch gründtliche underweisung/ deß rechten gebrauchs. Mit vil schönen Figuren/ aller ansehenden Jugend/ und andern liebhabern dieser Kunst/ als Goldschmiden/ Malern/ Bildhauvern/ Steinmetzen/ Schreibern etc. eigentlich fürgebildet/ vormals in Truck nie gesehen/ Sonder ietzunder erstmals von neuem an tag gegeben*, Frankfurt, 1563 (Wolfenbüttel, HAB, N24 Helmst. 2°).

joined by mathematicians and other devotees of perspective such as Adam Riese, Wolfgang Schmid,²⁷ Wenzel Jamnitzer, Johann II von Pfalz-Simmern, Hans Lencker, Georg Has and Augustin Hirschvogel, all produced texts seeking to bring the rewards of geometry within the reach of an audience including craftsmen, artists, and otherwise unspecified enthusiasts.²⁸ Or, as the pairs of rhyming couplets on Schmid's title-page explain "The art of Euclid, which obscures quite a lot [i.e. is not easily understood], is here brought to light and made easy in this carefully considered introduction."²⁹ This apparent enthusiasm for a mathematical foundation of art can perhaps be explained by market forces, at least partially. Once introduced, one-point perspective and geometrically accurate figures took on the dimensions of the latest technologies which came to dominate a market in which the role of the guilds was beginning to weaken. Only those artists who could provide mathematically correct works could continue to prosper. Evidently, these new technologies were not widely taught to artists in their traditional training but were proving nonetheless to be professionally crucial. Similarly, these books could also be meant to instruct patrons; by learning about perspective, patrons would become knowledgeable about this latest technology and its attendant visual consequences and thus appreciate it all the more in the works that they might commission. Such a scenario provides a logical explanation for the production of the above-mentioned texts.

²⁷ Adam Riese (1492-1559), *Rechenung nach der lenge/ auff den Linihen vnd Feder. Darzu forteil und behendigkeit durch die Proportionen/ Practica genant. Mit grüntlichem Vnterricht des visierens*, [1525], 1550 (Nuremberg, Germanisches Nationalmuseum, Bibliothek); and Wolfgang Schmid, *Das erst buch der Geometria. Ein kurtze unterweisung/ was/ un warauff Geometria gegruendet sey/ und wie man/ nach anweysung der selben/ mit dem Cirkel und Richtscheidt/ allerley Lini/ Flech/ und Cörper aufsteyhlen/ und/ in fürgegebner proportion/ machen soll. Aus bewerten leren/ gemeller freyen kunst/ allen liebhabern der selben/ zu einem eingang/ und allen künstlichen werckleuten zu sonderm nutz und vorteyl zusammen geordnet Durch Wolfgang Schmid Rechenmeyster zu Bamberg*, Nuremberg, 1539 (Wolfenbüttel, HAB, Nb 123).

²⁸ Wenzel Jamnitzer, *Perspectiva corporum regularium*, 1568; Johannes II von Pfalz-Simmern, *Ein schön nützlich Büchlein und Underweisung der Kunst des Messens, mit dem Zirkel, Richtscheidt, oder Linial*, 1531; Hans Lencker, *Perspectiva literaria* [...], Nuremberg, 1567; Georg Has, *Künstlicher und zierlicher Neuer vor nie gesehener Funffzig Perspectifischer Stück oder Boden*, Vienna, 1583; Augustin Hirschvogel, *Ein ägentliche und grundtliche Anweysung, in die Geometria* [...], Nuremberg, 1543; Laurentius Storer, *Geometria et perspectiva* [...], Augsburg, 1567. All are listed in Elkins's bibliography (as in note 22).

²⁹ Wolfgang Schmid (as in note 27): "Die Kunst so im Euclide steckt/ Gar manchem alzu ser verdeckt/ Wirt hie gar leicht und liecht gemacht/ Durch disc anleytung wol betracht," title-page of 1539 edition.

Considered within a broader context, these texts can be understood as part of what has been called the “mathematization” of Western thought. Timothy Reiss has described this complex process involving the gradual passage from the privileging of language as the primary way of knowing to the preference for mathematics as the ultimate epistemological tool.³⁰ He locates the beginning of this shift in approximately mid-fifteenth-century Italy and accounts for it by pointing to the study of ancient mathematical texts in humanist circles and in university curricula, and to the practical application of mathematics in the burgeoning areas of trade and commerce. James Ackerman has argued that artists were involved in the embrace of the mathematical paradigm at an especially early point.³¹ With his two treatises, one on perspective for painters, and another on calculation exercises useful to future merchants, the artist Piero della Francesca³² seems particularly well-suited to support this contention.

When we return from this broader context to Germany, the treatises can be seen simply as further evidence of an important intellectual and cultural shift. However, analysis of these texts will have further significance. Focusing on images of horses means concentrating on texts written by and for artists, thus showing how ideas about practical mathematics were received and used, not just by audiences north of the Alps, but ones that were decidedly artisanal. Beham, Lautensack and Schoen use the discussion of perspective and geometry to address particular concerns related to local art production. These concerns include the appropriate training for artists, and, as a demonstration of that training, the correct way to fashion a horse. At issue here is not the mathematics of the method but the historical significance of its assumptions.³³

All three artists were printmakers who spent at least some portion of their lives in Nuremberg, and all would even have been there briefly at the same time. Two of the three eventually lived in Frankfurt

³⁰ Timothy J. Reiss, *Knowledge, Discovery and Imagination in Early Modern Europe: The Rise of Aesthetic Rationalism* (Cambridge, 1997).

³¹ James Ackerman, “The Involvement of Artists in Renaissance Science” in *Science and the Arts in the Renaissance*, ed. John Shirley and F. David Hoeniger (London and Toronto, 1985), 94-129.

³² Piero della Francesca, *De prospectiva pingendi*, ed. G. Nicco-Fasola (Florence, 1984); and idem, *Trattato d'abaco. Dal codice Ashburnhamiano 280 della Biblioteca Medicea Laurenziana di Firenze*, ed. Gino Arrighi (Pisa, 1970).

³³ Besides Schoen, Beham and Lautensack, a few other German artists were involved in the production of scientific/artist manuals. Albrecht Dürer's treatise on human proportions was initially supposed to have included a section on horses, but in its published

and would have briefly overlapped there as well. Their lives are not well documented, and so we are unable to determine whether they knew each other, although one would assume that they might well have been familiar with the others' works. Erhard Schoen was the eldest and appears to be the least peripatetic. He was born around 1491 in Nuremberg, trained there with his father Marx Schoen, and worked in the city as a painter and designer of woodcuts until his death in 1542.³⁴ Sebald Beham was also born in Nuremberg, approximately nine years later, in 1500.³⁵ Like Schoen, Beham worked as a painter and woodcut designer, but unlike Schoen, he also designed engravings, etchings, and stained glass. It is not known with whom he trained but he was clearly influenced by Albrecht Dürer. Beham was temporarily banished from Nuremberg in 1525, along with his brother Barthel, for expressing religiously radical opinions, but was allowed to return to the city in the same year.³⁶ Sebald left Nuremberg briefly again between 1527 and 1528 for Ingolstadt. However, in 1528, Sebald Beham was again in trouble with the Nuremberg authorities, this time accused of plagiarizing material from Albrecht Dürer. This material was probably the studies of horse proportions, allegedly from Dürer's manuscripts, but which Beham published in 1528 as his own.³⁷ He left Nuremberg for good in 1530, traveling to Ingolstadt and Munich before settling in Frankfurt sometime in the early 1530s. He died there in 1550. Heinrich Lautensack, the youngest of the three artists, was born in Bamberg in 1522 and moved to Nuremberg in 1527 where he was eventually apprenticed to

form did not. Augustine Hirschvogel (1503-1553) was an etcher as well as a mathematician and Wenzel Jamnitzer (1507-1585), whose text was illustrated by Jost Amman, was a goldsmith, but their texts/illustrations do not deal with any organic forms, human or equine, thus making these two texts more mathematical and less practical in terms of applying geometry to artists' subjects.

³⁴ Jeffrey Chipps Smith, "Erhard Schön" in *Dictionary of Art*, ed. Jane Turner, vol. 28 (New York, 1996), 143-144.

³⁵ For information on Sebald Beham, see: Alison Stewart, "Sebald Beham" in *Dictionary of Art*, ed. Jane Turner, vol. 3 (New York, 1996), 505-508; idem, "Paper Festivals and Popular Entertainment: The Kermis Woodcuts of Sebald Beham in Reformation Nuremberg," *Sixteenth Century Studies* 24/2 (1993), 301-350; Moxey, *Peasants, Warriors and Wives*, 29-33, 35-66. Both Stewart and Moxey cite the older literature on Beham by Gustav Pauli and Heinrich Röttinger.

³⁶ For the Beham brothers' involvement in religious radicalism, see Herbert Zschelietzschky, *Die drei gottlosen Maler von Nürnberg* (Leipzig, 1975).

³⁷ Moxey, *Peasants, Warriors and Wives*, 32, following Kurthen, says that Beham was falsely accused; Joseph Kurthen, "Zum Problem der Dürerschen Pferdekonstruktion: Ein Beitrag zur Dürer und Beham Forschung," *Repertorium für Kunstwissenschaft* 44 (1924), 77-99.

the goldsmith Melchior Bayer.³⁸ Like Dürer, Lautensack thus had formal training in the goldsmiths' craft and also made woodcuts and engravings. Lautensack is documented in Frankfurt in 1548 where he became a master in 1550 and died there in 1568.

Each of these artists authored texts that seek to explain in a step-by-step, practical manner the use of technical tools from the realm of geometry (primarily compasses [Zirckel] and the ruler [Richtscheid]) in the construction of mathematically proportioned figures of horses. In writing and illustrating these texts, Schoen, Beham and Lautensack also offer clues about perceived conditions in the sixteenth-century art world on both the supply and the demand side of production, making these books as useful to the craftsman/artist as to the historian. These clues are found in the introductory statements of all three books in which the authors explain their motivations for making this information available and who their intended audience is. (The remaining texts, which make up the bulk of the books, are of a technical nature and describe in words the steps and procedures illustrated in the adjacent diagrams.)

The earliest of the three manuals is Sebald Beham's, first printed in Nuremberg in 1528. Its function and audience is already clearly indicated in the title: *This Little Booklet Demonstrates and Explains the Measurement or Proportions of the Horse, which is Useful for Young Apprentices, Painters and Goldsmiths*.³⁹ This is the publication that got Beham in trouble with the Nuremberg city council because of alleged plagiarism, as mentioned above. In the introductory remarks, Beham provided a justification for the production of his manual that raises interesting questions about the training of artists and the consumption of art in sixteenth-century Germany:

It is no wonder that these days the art of painting is so much despised and so little in demand. The reason for this is that the art of painting has been practiced very badly in that there has been no striving after measure. Therefore, anyone can recognize that such painting has no foundation. This is the source of the antagonism, this is why painting is despised and why in our own time it is so little regarded by people who understand a thing or two [i.e. the cultural/intellectual elite]. Therefore, we must change course, return to, and practice again the true foundation or basis of this lost art [and] manifest this again in the measurement of compasses and rulers and in pleasingly skillful proportion.⁴⁰

³⁸ "Heinrich Lautensack" in *Thieme-Becker Künstler-Lexikon*, ed. Hans Vollmer, vol. 22 (Leipzig, 1928), 463.

³⁹ Sebald Beham, [. . .] *maß oder proporcion der Ross* [. . .], as in note 25.

⁴⁰ Beham, ii recto: "Die weil nun die Malerei so gar in verachtung kummen ist/ und so wenig nach ir gfragt wirt/ nimbt mich nit wunder/ ursach/ den man sy so gar

Here Beham seems to express concern about the way art is currently being made. He makes painting's lack of a mathematical basis in measurement and proportion responsible for its lack of respect among intelligent people, who are thus disinclined to purchase paintings.

Such a statement must be understood as a clever marketing strategy in which the author tells his artisanal readers that their profession is in trouble but that he can show them how to fix it. Indeed, all of the texts make similar claims, as we will see. Dürer does this too in his notes to a draft from 1513 of an unpublished manual for young painters which, as we know from his other drafts, was to include instruction on measurement and proportion.

Now I recognize that at this time in our German nation there are many painters who need instruction. There are so many of them that lack true art and yet they have so many great works to execute, that they really should improve their work. Anyone who works without understanding has a harder task than one who works with it. Therefore, learn to understand everything properly. To those who cannot do a lot but who want to learn I gladly convey my following instructions.⁴¹

In their basic repetition and similar rhetorical function, such phrases almost acquire the status of literary topoi. And yet, because they all respond specifically to the use of mathematically based techniques in art production, they also need to be understood as important indicators of technical and aesthetic shifts. Evidently, the struggle of the traditional apprentice system of artistic instruction to keep up with these shifts appears to have been unsuccessful, thus helping to create a market for the artists' manuals. This hypothesis challenges the notion that the falling off of German art production during the course of the sixteenth century was caused primarily by objections to art raised by theologians of the Reformation.⁴² Perhaps it was instead the result of the

schlecht gebraucht hat/ in der selben gar kein maß gesucht ist worden/ das ein yetzlicher ermessen kan/ das sie auß keynem grundt gangen sey/ Dar auß die Feintschafft entsprungen und in verachtung kummen ist/ und yetz zu unsern zeyten wenig angesehen wirt von den ihnen die ein verstandt haben. Darumb müssen wir uns wenden und zuruck gen und widerholen/ das rechte fundament oder grund solcher verlornen kunst/ wider in messung des circckels/ und lini/ und in wol geschickter proporcion her fur tragen."

⁴¹ Albrecht Dürer, *Schriften und Briefen*, ed. Ernst Ullmann (Berlin, 1994), 158-159: "Nun erkenn ich, daß in unserer tewtzschen Nation bei den itzigen Zeiten viel Moleren der Lernung notdörftig wären. Dann sie manglen der rechten Kunst und haben doch viel große Werk zu machen, darzu fast not wär, daß sie ihre Werk bessreten, so ihr so ein große Zohl ist. Einem idlichen, der unwissend erbet, der erbet schwerer dann der so verständlich erbet. Dorum lernt all recht verstehn. Denselben die nit viel können und doch geren lernen wollten, den will ich mein nochfolgete Unterweisung gutwillich mitteilen."

⁴² For the Reformation/theological argument, see for example Carl Christensen, *Art*

educational system's failure to keep abreast of, or even take seriously, changes in the art market, thus leaving apprentices and young artists inadequately trained to deal with them.

The next book to be published was Erhard Schoen's, which appeared first in Nuremberg in 1538. Of the three manuals, Schoen's introduction is the briefest and the least detailed. He dedicated his *Manual of Proportion and Positioning of Jointed Mannequins*⁴³ to his apprentices and to other lovers of art and also mentioned masons and goldsmiths in the introduction. Schoen's text does not explicitly state that art is being practiced badly or that the apprentices are poorly trained, but he has written his book, he explains, because "my apprentices have often begged me to make the art of measurement and proportion easier for them so that they might better understand the writings of Dürer, Vitruvius, and others."⁴⁴ In Schoen's scenario, the apprentices recognize the need to know about mathematically based techniques. Evidently missing instruction in the workshop on these techniques, they turn to the writings of educated experts, but the books prove too difficult. Therefore, it is up to Schoen to provide a book that can present this material to his apprentices and others in the "easiest and most straight-forward" manner. Clearly, the new technologies were not easily intellectually accessible to all, with especially the less educated artisans struggling as much to master the techniques as they were even to understand the writings of the learned promulgators. No doubt Schoen's emphasis on simple clarity and fool-proof explanation may also be a marketing strategy, similar to that employed in the modern-day series of books, each entitled "The Complete Idiot's Guide To . . .," which likewise seeks to bring new technologies within the reach of the untutored novice. Nonetheless, it seems probable that Schoen's book really did fulfill a need for a pared-down version of potentially complex techniques which could be quickly grasped and practiced by the average craftsman.

In 1564, Heinrich Lautensack made his contribution to this technical and didactic genre with his manual *A Short but Thorough Demonstration*

and the Reformation in Germany (Athens, OH, 1979), especially the last chapter, "The Reformation and the Decline of German Art," 164-181.

⁴³ Erhart Schoen, as in note 24.

⁴⁴ Schoen, as reproduced in Bartsch, 140: "Nach dem mir meine Jungenn zum offtern mal mit pit angelegen sindt/ diese kunst der proporcion und messung halben Innen zuerleichtern das sie dester baß des durers und den vitruvium unnd anderer pucher zu leychterem verstant auch kumen dest paß begrieffen hab ich mich/ unterstanden dieses puchlein für meine lecr Jungen auffß leichtest und auffß einfeltigest furgehalten . . ."

*of the Correct Use of Compasses and Ruler and Also of Perspective and the Proportions of Man and Horse.*⁴⁵ Like Beham and Schoen, Lautensack was also writing primarily for an artisanal audience, mentioning apprentices, goldsmiths, painters, sculptors, carpenters, and masons in particular, but also including everybody who is a devotee of the art of measurement. According to Lautensack, conditions have not improved in the thirty-six years since Beham's publication. In his introduction, Lautensack asks why young artists still do not have a firm grasp of art,⁴⁶ and then proceeds to answer the question. He blames other artists for not sharing their knowledge and skills with the young,⁴⁷ and he also points to a kind of tyranny of ineptitude which reigns in many workshops among apprentices who discourage one another from learning too much so that no one will be made to look bad by another.⁴⁸ But unlike Beham, who bemoaned a dearth of interest in art, Lautensack blames a glut of readily affordable art for discouraging young artists from really applying themselves to make a quality product. He emphasizes this point by quoting a recent proverb: "A man can buy a work of art for a penny which he couldn't make any better himself if he worked on it his whole life-long."⁴⁹

Both Beham and Lautensack depicted their current context of art production as flawed, on the wrong track, in need of new direction. Schoen intimated that a new direction was already there but that it was all but inaccessible, hidden in texts inscrutable to most craftsmen. The way out of the aesthetic and educational impasse was to go back to the basics, to return to the originative font of true art: geometry.⁵⁰ Lautensack maintains that the art of measurement provides the very

⁴⁵ Heinrich Lautensack, as in note 26.

⁴⁶ Lautensack, iii recto: "Zum dritten muß ich abermal frage/ was doch die ursach sey/ dieweil die kunst ietzt so gar am tag ligt/ wie man sagt/ das die iugent doch nicht ein guten vertand darin uberkomt."

⁴⁷ Lautensack, iii verso: "Zum ersten wie es zugehe/ das irer so vil seind/ die mit feinen gaben un künsten von Gott begabet sind/ da sie mancher Edlen iugend möchten mit dienen/ und sie lustig machen etwas zu lehrnen/ aber daselb ietzt zur zeit underlassen wirt/ und ehe sie derselben Kunst eine an tag geben/ so trugen sie es viel ehe mit sich in das grab [. . .]."

⁴⁸ Lautensack, iii recto: "das dunckt mich die ursach zum theil sein/ das mancher iunger liebhaber dieser kunst oft gehindert wirdt von diesen Gesellen/ die nichts können/ und auch nicht wöllen das andere etwas lehrnen [. . .]."

⁴⁹ Lautensack, iii recto: "Es kaufft einer ein Kunststuck umb ein kreutzer/ er macht es sein lebtag nicht so gut."

⁵⁰ Refer to the quote from Beham, footnote 40.

foundation of art-making, and it is precisely this foundation that will allow the young apprentice to get ahead in his craft and in life itself:

Every reasonable young man should think about this: if he has a good foundation in this art [of measurement], then things will come more easily to him. So he will not be like many apprentices who think they are big shots but who cannot measure an angle or make a square or a good picture if their lives depended on it. [...] There's an old proverb which is certainly true: if you learn well, you will eat fine chickens; if you learn poorly, you will be eating with the sow out of the slop bucket. He who can really do something will go far; he can go wherever he chooses. He who cannot do anything gets left behind.⁵¹

As it is today, the ability to manipulate the newest technologies promised upward mobility and prosperity, while failure to keep up meant falling behind into poverty and hardship.

In order to teach and demonstrate the use of measurement, proportion and their attendant tools, and also to sell their books, Beham, Schoen and Lautensack all chose a subject that they must have thought would be of interest and import to their readers, something that these craftsmen/artists would want to learn and be able to use. That subject was the horse. The fact that instruction on how to draw horses in these books often appeared in addition to instruction on how to draw human figures only underlines the fundamental importance obviously attached to the ability to render this subject. This importance is further substantiated by several other observations. The original 1528 edition of Sebald Beham's book dealt exclusively with the figure of the horse. Beham's alleged theft of this material and the serious consequences that followed also indicate that there was much at stake professionally in being able to create well-constructed images of horses. Schoen was somewhat slower to recognize this, but by the 1542 edition of his book, he had added six new pages that dealt with drawing proportionate horses.⁵² In the course of the sixteenth century and into the early seventeenth, the books by all three artists went through several editions, again signaling that their contents were topical and marketable: Beham's book,

⁵¹ Lautensack, iii recto: "Wiewol ein jeglicher verstendiger junger solt gedencken/ so er ein gut Fundament oder grund in dieser kunst hette/ so würde in alles desto leichter und geringer ankommen was er macht/ und nicht also/ wie der Gesellen viel seind/ die gewaltige Hansen wöllen sein/ un wenn es brennen und schinden gülte/ so könden sie nicht ein winckelhacken/ noch vierung/ oder ein gut bild/ stellen oder machen [...]. Das ist ein alt Sprichwort/ und ist auch gewißlich war: lernstu wol, so issest du dich guter Hünere vol/ Lernstu ubel/ so mustu mit der Sau über den kübel. Wenn einer etwas kan/ der kompt auß/ er kom wohin er wöll/ dargegen müssen die dahinden bleiben, die nichts können."

⁵² *The Illustrated Bartsch*, vol. 13, pt. 1, 139.

renamed the *Booklet on Art and its Instruction* but still containing information on horses, went through an additional seven editions, Schoen's went through five, and Lautensack's two.⁵³

Each of the books demonstrates how to draw horses in a rather limited number of poses. Beham's book is most rich visually with a series of woodcuts illustrating three basic poses: the horse standing; the horse trotting⁵⁴ with its head behind the vertical (that is, with the head bent down and back toward the body so that the chin almost touches the chest); and the horse trotting with its head above the vertical (that is, the head extended up and forward so that it is almost parallel to the ground-line; figures 1 and 2). Several woodcuts are used to illustrate each of these poses. First, Beham textually and visually instructs the reader how to fashion the basic grid that will be used as a guide for constructing the horse's body. With the aid of compasses and ruler, the reader/artist is to draw a square made up of nine smaller squares, some of which are further subdivided according to mathematical ratios. Illustrations follow that show the outlines of part of the horse's body beginning to be calculated and delineated inside the squares, then the entire outline of the body is seen within the grid armature (as in figure 1), and then just the body without the grid is shown but with hatching

⁵³ Sebald Beham, *Sebalden Behems Kunst und Lehrbuchlin/ Malern unnd Reissen zu lernen/ Nach rechter Proportion/ Maß und Auftheilung deß Cirkels. Angehenden Malern unnd Kunstbaren werckleuten dienlich*, published in 1546, 1552, 1557, 1565, 1566, 1582 and 1605 (*The Illustrated Bartsch*, vol. 15, ed. Robert Koch [New York, 1978], 219); Erhard Schoen's book was published in 1538, 1540, 1542, 1543 and 1565 (*The Illustrated Bartsch*, vol. 13, pt. 1, 139); and Heinrich Lautensack's was published in 1564 and 1618 (*Hollstein's German Engravings, Etchings and Woodcuts*, vol. 21 [Amsterdam, 1978], 128).

⁵⁴ The question of exactly which gait the horse is performing is somewhat problematic. As the horse in the illustration is simultaneously moving diagonal pairs of legs (that is, its left fore and right hind) while the opposite diagonal pair are on the ground, this must be the trot, the only gait in which this sequence of footfalls is present. But to judge from the level of animation in the horse's body, it appears more to be walking forward. However, in the walk, the sequence of footfalls has the horse moving one leg at a time (it is a four-beat gait as opposed to the two-beat gait of the trot) on the same side of its body; that is for example left hind, left fore, right hind, right fore, which Beham's horse is definitely not doing. It is impossible for us now to ascertain Beham's actual level of knowledge of the exact sequence of footfalls of a horse's walk or trot; the sequences at the canter and gallop were not known until the nineteenth century, thanks to Eadweard Muybridge's photographic work. Beham's rendition might therefore be simply a matter of artistic convention rather than factual illustration. For the sake of consistency, I have designated the gaits of the horses discussed in this article according to the sequence of footfalls as we know them now. For the gaits of the horse, see *The Manual of Horsemanship*, 10th ed. (Kenilworth, 1993), 25-29; for the role of artistic convention in representing horses galloping, see Irma B. Jaffe, "The Flying Gallop: East and West," *Art Bulletin* 65 (1983), 183-200.



Je ich voigesagt hab/ das ich die reb kürgen wil
von wegen das ich dirß vor genüg gesaget hab /
thû ich ym also/ wie ich gesagt hab vnd du es hie
siehest auff gerissen/ vnd da ihesseit außgemacht.

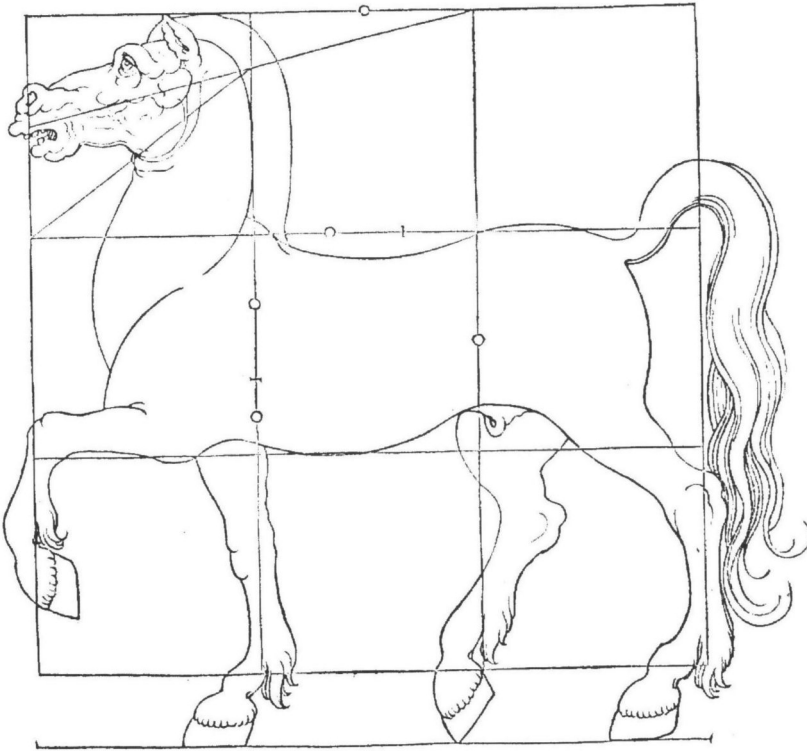


Figure 1. Sebald Beham, Trotting Horse with Grid, woodcut illustration in
S. Beham, . . . *Measurement or Proportions of the Horse* . . . , Nuremberg, 1528,
fol. 17v. Wolfenbüttel, Herzog August Bibliothek, Nb 123.

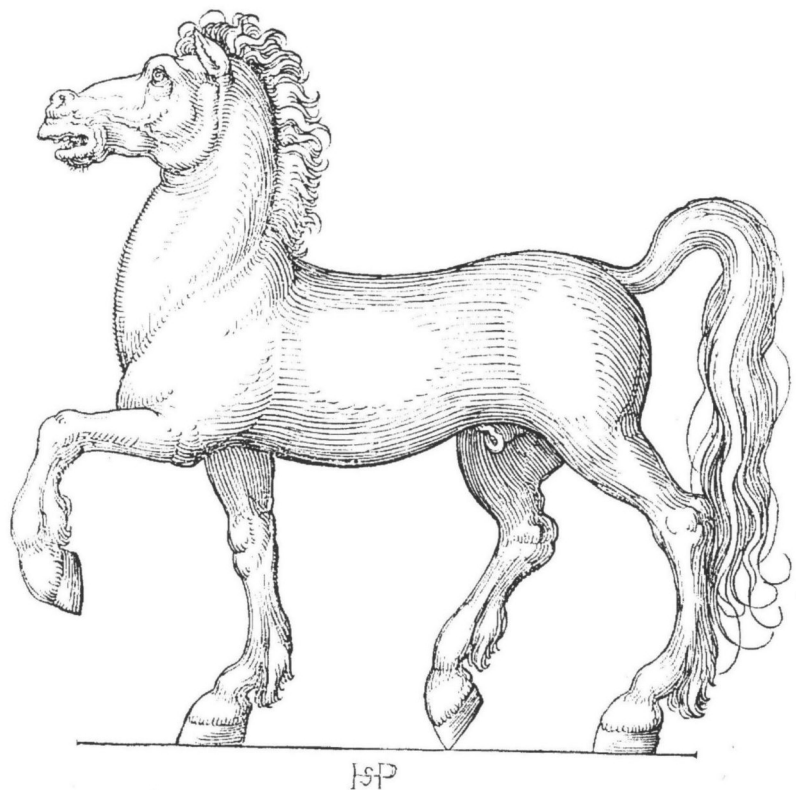


Figure 2. Sebald Beham, Trotting Horse, woodcut illustration in S. Beham, . . . *Measurement and Proportions of the Horse . . .*, Nuremberg, 1528, fol. 18v. Wolfenbüttel, Herzog August Bibliothek, Nb 123.

added as interior modeling (as in figure 2). This basic sequence is followed for each of the three poses. In addition, one page illustrates how to construct four different positions of the head according to proportionate measurements, followed by the next page which shows the same heads without the lines of measurement. All of the images present the horses in profile with their bodies parallel to the picture plane. Beham's 1528 book ends with an announcement of the artist's intention to publish another book "in Latin and in German, with many more figures of the horse than are in this book," but such a publication never appeared.⁵⁵

Schoen's book similarly begins with the construction of a square grid although his is much more complicated because he deals with the third dimension as well. His figure is as much a box as it is a grid. Three basic poses are also illustrated by Schoen, although they are slightly different from Beham's: the horse trotting but with the head on the vertical and including a rider; the horse standing; and the horse rearing. Schoen's woodcut illustrations, however, are far less lavish than Beham's. On one page, he shows the construction of the horse and rider within a complex grid consisting of a circle and various sizes of squares. The horse is delineated only by outlines and is therefore flat, but the rider has been rendered according to three-dimensional volumes. On the next page, the horse and rider are shown without the grid and in a narrative-type scene in which the horse, under saddle and bridle, carries his rider, who sports a feathered cap, lengthy sword and roweled spurs, through a landscape. Two horses appear in the next illustration: one rears with its body facing off to the left but with its head and neck twisted to the right, while the other horse simply stands with its weight equally distributed on all four feet. These horses are rendered as crudely fashioned three-dimensional objects, as if their basic volumes have just been roughed out in the initial phases of carving or sculpting. Their placement approximately forty-five degrees from the background plane affords the viewer a three-quarter view of their bodies, thus emphasizing their spatial situation and volumetric qualities. The standing horse is shown again in the following illustration, but viewed from different angles: once seen directly from the rear, in the left half of the image, and once seen from head-on, in the right. Again, the

⁵⁵ Beham, 1528, 19v: "Ob sich einer unterstehen wolt/ mir dyses buchleyn nach zu drucken/ sollest du wissen/ das ich das buchleyn wider drucken wil mit vil mer figuren der Roß den hye steet/ deutsch und lateinisch."

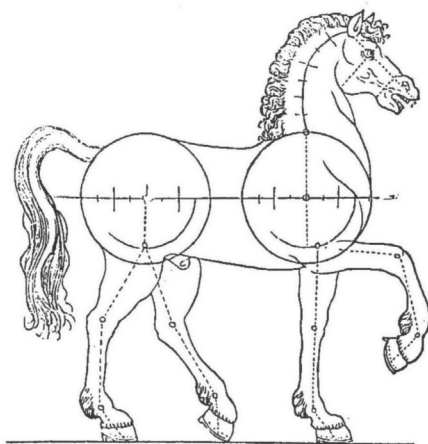
horses look as if they are roughly cut objects, probably referring to the mannequins Schoen mentions in the title of his book. In this illustration, however, the horses also appear in a grid consisting of 24 squares. The last illustration depicts two fully-modeled horses, again positioned at forty-five degrees from the background plane, but here contained within squared grids that have been rendered as three-dimensional boxes. One horse faces left and has one foreleg raised; the other faces right and has one hindleg raised. Clearly, Schoen seems intent on teaching his readers how to understand the horse as a three-dimensional body the volume of which variously displaces space. His approach is more sculptural than Beham's more graphic and linear rendition.

Like Beham and Schoen, Lautensack is also concerned with constructing the horse according to mathematical ratios and proportionate measures. Like Beham, he tends to emphasize the linear over the volumetric. However, instead of constructing a grid as the mathematically defined spatial net in which the outlines of the horse may be caught and defined, Lautensack abstracts the forms of the horse down to basic lines and circles which can then be easily manipulated in various poses. The torso is made up of two circles, drawn with compasses, while the legs, neck and head are all conceived of as lines, drawn with a ruler. Lautensack demonstrates how to draw horses in this geometrically schematic way first, and then shows the horses in the same pose rendered naturalistically. These poses, like Beham's and Schoen's, are limited in variety, but shown by Lautensack from different angles: a horse trotting (one seen in profile [figure 3], and another seen from the front in a three-quarter view), a horse rearing (seen from the back, left and right in three-quarter views), and a horse grazing (seen only from the front in three-quarter view).

These manuals by Beham, Schoen and Lautensack need to be seen within several simultaneous and overlapping contexts. One is the mathematization of the art market, as discussed above, and another is the wide range of cultural and economic responses to the horse in early modern European life. We know from several sources, visual as well as textual, that Albrecht Dürer made proportional studies of horses. We are informed of this by Joachim Camerarius, the German humanist and Dürer's personal acquaintance, who translated the artist's book on human proportions, published posthumously in German in 1528, into Latin in 1532. In Camerarius's introduction, he states:

As to the promise, which I hear certain persons are making in conversation or in writing, to publish a book Dürer wrote on the symmetry of the parts of the horse,

Von der Proportz



Also will ich dich hie dieses Koffz oder Pferd in seiner Proportz auff das schlechft mit den blindrissen lehren stellen vnd wenden/ vnd darnach auch mit fleisch in seinem hauptstrich auffreissen/ das du denn sehen kauft wie ich es meine / Also hab ich hieher drey Koffz gesetzt/ eins vortwerz/ vnd eins hinderwerz/ auch eins ein wenig nach der seiten/ daran denn du mein meinung mit de zweyen Circelrissen/ wie sie in einander oder neben einander in irer stellung kommen/ sehest/ vñ das du auch darnach sehest das Koffz in seiner Proportz also auffzu reissen.

Zu weiterem

Figure 3. Heinrich Lautensack, Trotting Horse, woodcut illustration in H. Lautensack, . . . *Perspective and the Proportions of Man and Horse*, Frankfurt, 1564, fol. 52v. Wolfenbüttel, Herzog August Bibliothek, N 24 Helmst. 2°.

I cannot but wonder from what source they will obtain after his death what he never completed during his life. Although I am well aware that Albrecht had begun to investigate the law of truth in this matter too, and had made a certain number of measurements, I also know that he lost all he had done through the treachery of a certain person by whose means it came about that the author's notes were stolen, so that he [i.e. Dürer] never cared to begin the work afresh.⁵⁶

Dürer's use of the proportional construction of the horse in his art is indicated in the study for his famous engraving *Knight, Death and the Devil* (1513). In this drawing, now at the Biblioteca Ambrosiana in Milan,

⁵⁶ Joachim Camerarius, introduction to Albrecht Dürer's book on human proportions, cited in William Conway, *Literary Remains of Albrecht Dürer* (London, 1889), 136ff. The person to whom Camerarius refers is generally regarded to be Sebald Beham.

the lines of the grid used to construct the horse's body are still visible.⁵⁷ Dürer's interest in the horse is also indicated in the diary he kept while traveling through the Netherlands in 1520-1. This idiosyncratic collection of personal remarks and financial tabulations contains two observations concerning horses. In one, Dürer records his visit to the annual horse fair in Antwerp in 1521, noting the magnificent stallions that he saw and the sale of two in particular for 700 gulden each (earlier he mentions a portrait he had painted in oil as worth 25 gulden).⁵⁸ He also describes his visit to the Antwerp branch office of the Fugger firm, where he admired the impressive tower, lovely garden, and beautiful stallions.⁵⁹

This interest in the horse and its ideal proportions was an important concern shared by artists on both sides of the Alps. Leonardo da Vinci made many proportional studies of horses in preparation for the Sforza monument that was never completed.⁶⁰ Vasari tells us that Leonardo even wrote a reference book on the anatomy of the horse and that Michelangelo shared similar interests: "In order to achieve perfection, he [i.e. Michelangelo] made endless anatomical studies, dissecting corpses in order to discover the principle of their construction. [. . .] He studied not only men but animals as well, and especially horses, which he loved to own."⁶¹ In contrast, Vasari specifically criticizes the early hero of perspective, Paolo Uccello, for making a mistake in his rendering of the horse in his equestrian portrait of the condottiere John Hawkwood:

In Santa Maria del Fiore, Uccello painted a horse in terra verde to commemorate Giovanni Acuto [John Hawkwood], the English captain of the Florentines who died in 1393. [. . .] Unfortunately, Paolo's horse has been painted moving its legs on one side only, and this is something which horses cannot do without falling over.⁶²

⁵⁷ *Albrecht Dürer 1471 1971* (Munich, 1971), cat. nr. 502, p. 260.

⁵⁸ Albrecht Dürer in *Schriften und Briefen*, 91: "Ich bin am letzten Pfingstfeiertag zu Antorff auf dem Jahrroßmarkt gewesen und hab do übergelassen hübscher Hengst sehen bereuten, und sonderlich sind zweien Hengst verkauft worden um 700 gulden." For reference to the portrait, 88: "Ich hab dem Rentmeister Lorencz Sterck gar rein fleißig mit Ölfarben konterfet, war wert 25 Gulden."

⁵⁹ Dürer in *Schriften und Briefen*, 64: "Item ich bin zu Antorff ins Fockern Haus gewest, das er neu gar köstlich mit ein sundern Turn, weit und groß, mit ein schönen Garten gebauet hat, und hab seine hübsche Hengst gesehen."

⁶⁰ See note 4.

⁶¹ For Leonardo, see Giorgio Vasari, *Lives of the Famous Artists* (1568), transl. George Bull, vol. 1, 264. For Michelangelo, see Vasari, *Lives of the Famous Artists*, vol. 1, 418; and William Wallace, "Miscellanea Curiositae Michelangelae: A Steep Tariff, a Half-Dozen Horses, and Yards of Taffeta," *Renaissance Quarterly* 47:2 (1994), 330-350.

⁶² Vasari, *Lives of the Famous Artists*, vol. 1, 101.

Vasari's remarks are very much about the naturalist aesthetic he was keen to promote (and which the use of measurement, proportion and one-point perspective all supported) but they also indicate what an important role the depiction of horses had in demonstrating and embodying that aesthetic. The manuals by Beham, Schoen and Lautensack provide further evidence supporting that role. When one considers the kinds of commissions and projects in which early modern artists were involved, the technical and aesthetic emphases on the horse become more readily understandable. Horses are necessary components in images that signaled some of the most basic concerns of early modern society, and they are thus found in works that artists repeatedly produced, either on commission or on speculation for a free-market certain to be responsive to such concerns. One of these concerns was the wielding of power, which, in the early modern period, was largely based on the ability to raise and command an army. Thus, to portray someone in an equestrian portrait as a commander-in-chief, regardless of the scale of his military machine, was to fashion an identity redolent with assumptions about access to and control of power. The fact that most of the romantic and glorious tasks of the commander were carried out on horseback does not by itself explain the prevalence of the equestrian portrait. Effortless mastering of the impressive power of an exquisitely bred stallion became an important visual formula for communicating the bravery and power of the rider, not only over other men (his soldiers and his enemies), but even over nature itself. For the early modern artist and patron, the iconographical roots of the equestrian portrait reached back to ancient Rome, and thus served to transport notions of authority and control from one empire to another. In addition, horses appeared regularly in religious narratives, the very bread and butter of professional production for most artists. Certain key events in the lives of saints Paul, Martin, Eustace, and George are pictured as occurring on (or off) horseback, and many crucifixion scenes feature a colorful assortment of equines milling around beneath the crosses at Golgotha.

But saints, soldiers and artists were not the only ones involved with horses. Unlike today, the horse was part of many people's quotidian experience in the early modern period, which most likely explains their presence in so many iconographical formulae in the first place. The spectrum of people who dealt with horses in some form or other was almost as wide as the spectrum of society itself, ranging from humble farmers to educated humanists, emperors and kings. For example, a document from 1368 listing household items considered tax-free in the

free imperial city of Augsburg included such basic necessities as dishes, linens, and one to two horses.⁶³ Quotations of prices published in 1544, to which the city craftsmen of Leipzig were to adhere, list a good farmer's saddle at nine groschen.⁶⁴ In comparison, a quality pair of boots would have cost the farmer eighteen groschen.⁶⁵ He could buy a simple pair of pants plus a jacket for four groschen, which is a little under half the price of the saddle.⁶⁶ A fine riding saddle covered in leather, however, would cost one gulden, the same amount of money one would pay for a silk overgarment.⁶⁷ These prices indicate that there was a range of commodities associated with horses and that the very simple ones were easily affordable for all but the most destitute—no doubt they had to be, precisely because the horse was such an important part of life, used for work and transport in both rural and urban settings.

The care and breeding of fine horses occupied the noblest minds and depleted the richest pockets of Europe. Leon Battista Alberti wrote treatises not only on painting, architecture and sculpture but also on horses.⁶⁸ Camerarius did as well, in addition to translating Xenophon's book on horsemanship from Greek into Latin.⁶⁹ In describing his friend Albrecht Dürer, Camerarius praised the artist's athletic build and his finely-featured face which the humanist likened to the head of a well-bred horse.⁷⁰ Marx Fugger, heir to the Fugger fortunes and chief executive of the family firm, wrote books on horse-breeding and -training based on his own experiences of owning and managing international stud-farms.⁷¹

⁶³ Friedrich Blendinger, "Die Zunfterhebung von 1368" in *Geschichte der Stadt Augsburg*, ed. G. Gottlieb, W. Baer, et al., 2nd ed. (Stuttgart, 1985), 152.

⁶⁴ *Der Stad Leipzig allerley Ordunge*, Leipzig, 1544; Wolfenbüttel, HAB, 240.5 Quod (3), E iii verso.

⁶⁵ *Der Stad Leipzig allerley Ordunge*, E recto.

⁶⁶ *Der Stad Leipzig allerley Ordunge*, B iii recto.

⁶⁷ *Der Stad Leipzig allerley Ordunge*, E iii verso and A iii recto.

⁶⁸ Leon Battista Alberti, *Il cavallo*, trans. Silvia Bassoni (Lodi, 1989).

⁶⁹ Joachim Camerarius, *In hoc libro haec insunt: Hippocomicus . . .*, Leipzig, 1556; Wolfenbüttel, HAB, 513 Quod (3) and Fg 42. This collection of essays and translations by Camerarius contains "Hippocomicus quae est disputatio de curandis equis," "Xenophontis liber de re equestri latinus factus," and "Nomina equestria Graeca & Latina."

⁷⁰ Cited in Wolfgang Stechow, *Northern Renaissance Art 1400-1500: Sources and Documents* (Evanston, 1989), 123-124: "Nature bestowed on him [Dürer] a body remarkable in build and stature and worthy of the noble mind it contained. [. . .] His head reminded one of a thoroughbred, his eyes were flashing, his nose was nobly formed. [. . .] His neck was rather long, his chest broad, his body was not too stout, his thighs muscular, his legs firm and steady."

⁷¹ Marx Fugger (1529-1597), *Wie und wo man ein Gestüt von guten edlen Kriegsgrossen aufrichten und erhalten [. . .] soll [. . .]*, 1578, and *Von der Gestiuterey*, 1584 and 1611.

And in the heavily autobiographical account of *Weißkunig*, dictated by the emperor Maximilian I of Habsburg, one entire chapter is devoted to explaining why it is a necessity for a king to understand the care and training of horses.⁷²

Seen within this framework, the importance accorded to horses in early modern art becomes more readily understandable. In turn, by attending to the ways in which artists were instructed to fashion horses, as explained in the artists' manuals, the extent and repercussions of a mathematically-based aesthetic in and on art production and the art market becomes increasingly clear. Looking at equine imagery brings a scientific aesthetic sharply in focus while it also reveals the profound impact of art on science, a subject to which we now turn.

III. *Science: Epistemological and Artistic Issues*

Just as mathematical perspective is considered a vital component to early modern art, so advances in science and technology are deemed definitive characteristics of the early modern age in general. Although historians have correctly insisted that the Middle Ages did not lack an interest in and engagement with science, few would argue with the assertion that the nature of scientific inquiry—the assumptions upon which it rested, its methods and materials, and even the questions it asked—had changed by the early modern period. Yet, when we consider the history of what would now be known as veterinary science, specifically with regard to knowledge about horses, what emerges (at least for sixteenth-century materials) is a slightly different picture, in which the continuing influence of and regard for more traditional ways of knowing remain central to theory and practice. In the following discussion, science is understood to be: “systematic and formulated knowledge.”⁷³

It should come as no surprise that the same curiosity that drove certain people to inquire into everything from the workings of the human body to the movements of the stars should also spur them on to better understand the physiology and the nature of the horse. Carlo Ruini's book on equine anatomy, published in 1598, is an example of this desire for new knowledge based on careful study. Both the illustrations and text of Ruini's *Dell' anatomia et dell' infirmità del cavallo* are based on dis-

⁷² *Kaiser Maximilians Weisskunig*, vol. 1, ed. H.T. Musper (Stuttgart, 1956), 236-37.

⁷³ *The Concise Oxford Dictionary*, ed. J.B. Sykes, 7th ed. (Oxford, 1985), 939.

section and direct anatomical observation.⁷⁴ But even Ruini, for all his careful dissection, did not get everything right, and continued to propound some of the mistaken ideas about anatomy current since antiquity.⁷⁵ Translations of these classical sources on animal husbandry and health, and medieval ones as well, such as books by Vegetius and Albertus Magnus, continued to be printed and to enjoy further authority.⁷⁶

Yet most books dealing with the care and treatment of horses from the sixteenth and into the seventeenth century contain information based on the practical experience of non-university educated stable-masters that has been passed on from generation to generation without significant alteration. These books were not informed by anatomical studies or even by biological fundamentals, but instead simply offered a number of cures for a range of equine ailments. Nonetheless, I have grouped these latter books loosely under the rubric of scientific texts because, while their methods may not be scientific in the orthodox sense, their goals are: namely, to understand and therefore to control natural phenomena; they represent the most "systematic and formulated knowledge" on horses at the time.

In early modern sources, information about equine ailments and their treatments is discussed in books that cover a range of topics, including riding, training, breeding, and general horse maintenance. These books were published for a wide range of readers: from the small pamphlets for hard-working people and their equally hard-working horses, to the modest treatises for stable-masters, to the luxurious tomes for wealthy and often aristocratic equine-enthusiasts. There are no sixteenth-century sources that would easily correspond to what we would think of today as veterinary texts based on anatomy, physiology, the etiology of disease and its diagnosis and treatment. As we know from Vasari, Michelangelo and Leonardo studied equine anatomy, but neither was educated in medicine, and their unpublished studies did not serve equine science. Carlo Ruini, whose 1598 *Dell' anatomia* was one of the first published

⁷⁴ Carlo Ruini, ca. 1530-1598. Angela von den Driesch, *Geschichte der Tiermedizin: 5000 Jahre Tierheilkunde* (Munich, 1989), 74-75; D. Karasszon, *A Concise History of Veterinary Medicine* (Budapest, 1988), 270, 253-254.

⁷⁵ Von den Driesch, *Geschichte der Tiermedizin*, 75.

⁷⁶ Vegetius Renatus, 5th century, *Ars veterinaria sive Mulomedicina*; German translation for example: *Flaviū Vegetiū Renati/ Ain Buchlein/vonn rechter unnd warhaffter kunst der Artzney/ allerley krankheiten [...] aller Thyer*, Augsburg, 1532; Wolfenbüttel, HAB, 240.5 Quod.(4). Albertus Magnus, 1193-1280; German translation for example: *Thierbuch Alberti magni/ Von art natur und Eygenschafft der Thiere*, Frankfurt, 1545; Munich, Staabi, Res/ 2° P. lat. 19.

texts on equine anatomy, was educated as a lawyer. The only other group of people who seemed interested in dissecting horses in the sixteenth and seventeenth centuries were physicians, but they were looking for parallels to human anatomy, not for further information on the horse.⁷⁷

Instead of searching for new ways to understand bodily functions and disease, the men who dealt with horses seem to have understood the animals' health and indeed their temperaments in terms of the ancient and traditional theory of the four humors as propounded by Hippocrates (460-377 BC). Like people, horses too could be characterized according to which one of the four humors—blood, phlegm, black gall or yellow gall—dominated the others. A horse's color, its conformation, its attitude and its breeding all offered clues to its own particular and individual imbalance of the humors. Not surprisingly then, one of the main remedies for ailments of all sorts was phlebotomy or blood-letting, to be performed at carefully prescribed times in accordance with seasonal and lunar rhythms.⁷⁸

The men responsible for the dissemination of this information, either the authors or, in some cases, the translators, were an odd mix of people. At one end of the spectrum were educated humanists, like Marx Fugger, who wrote on stud-farm management,⁷⁹ and Johann Fayser who translated Federico Grisoni's famous treatise on riding as well as a collection of ancient texts on horse-care.⁸⁰ Members of the aristocracy, such as Hanns Friedrich Hörwarth von Hohenberg, also wrote books that

⁷⁷ Karasszon, *A Concise History of Veterinary Medicine*, 269. For a wider discussion of the practice of animal dissection for the purpose of gaining potential insights into human anatomy, see Roger French, *Dissection and Vivisection in the European Renaissance* (Aldershot, 1999).

⁷⁸ Von den Driesch, *Geschichte der Tiermedizin*, 37 and 62.

⁷⁹ Marx Fugger, as in note 71, educated at the university of Leuven. G. Andres, *Marx Fugger und die deutsche Pferdezucht und -heilkunde* (Ph.D. dissertation, University of Berlin, 1937).

⁸⁰ Johann Fayser (Fesser, Faïser) the Younger, educated at the University of Frankfurt an der Oder. *Hippiatria: Grundlicher Bericht und aller ordentlichste Beschreibung der bewerten Roßärztney*, Augsburg, 1576; Munich, Staabi., Res/ 2° Gymn.20. This is a translation of ancient hippological texts. Fayser also translated the work of Federico Grisoni in 1570 following an inadequate German translation in 1566 by Veit Tufft (see below, note 85): *Künstlicher Bericht Vnd allerzierlichste beschreibung des Edlen, Vhesten vnnnd Hochberühmbten Herrn Friderici Grisonis [...] Wie die Streibarn Pferd [...] geschicht und vollkommen zumachen*, Augsburg, 1573; Augsburg, Staats- und Stadtbibliothek, 2°. 10 Bl. and *Grisoni Hippocomic*, Augsburg, 1599; Munich, Staabi., Rar. 2239 and Wolfenbüttel, HAB, 15 Bell. 2° (3); see also *Welt im Umbruch: Augsburg zwischen Renaissance und Barock*, vol. 1 (Augsburg, 1980), cat. nr. 364, 361-362.

included discussions of equine ailments and cures.⁸¹ In a few instances, translators of earlier texts were university-educated physicians, such as Peter Offenbach, who translated Ruini from Italian into German (published in 1603 under the Latin title *Anatomia et medicina equorum nova*), and Gregor Zechendorff, who translated Johannes Ruellius from Latin into German in 1575.⁸² But in most cases, the men who wrote about horses from the Middle Ages on were those who actually worked around them including farriers, spur-makers and stable-masters (*Stallmeister*) employed by royalty or the wealthy, such as Master Albrecht who worked for Emperor Friedrich II,⁸³ Hans Brolesse who worked for Albrecht of Brandenburg,⁸⁴ Mang Seuter and Veit Tufft who worked for Marx Fugger,⁸⁵ Johannes Geissbert who worked for the Dukes of

⁸¹ Hanns Friderich Hörwart von Hohenburg, *Von der Hochberhümpfen/ Adelichen und Ritterlichen Kunst der Reytrey*, Tegernsee, 1577; Munich, Staabi., Res/ 2° Gymn.20.

⁸² On the title-page of Offenbach's translation to Ruini, the former is identified as "Petrum Offenbach der Artzney Doctorem, Bestalten medicum und Physicum in Franckfurt." Gregor Zechendorff is identified on the title-page of his translation of Ruellius as "den hochgelerten Herrn Gregorium Zechendorffer/ der Artzney Doctorn und medicum zu Eger." Johannes Ruellium, *Roßartzney. Zwey nutzlichen gute Buche von mancherley gebrechen und krankheiten der Roß [. . .]*, Nuremberg, 1575; Wolfenbüttel, HAB, 20 Bell. (2). Ruellius was himself a physician and translator; in the employ of Francis I of France, Ruellius (Ruel) translated the Byzantine compilation of hippological texts known as the *Corpus Hippiatricorum Graecorum* (9th/10th century) from Greek into Latin. Ruellius' book, *Veterinariae medicinae libri duo Johanne Ruellio Suessionensi interprete* was printed in 1530 and dedicated to Francis I. See von den Driesch, *Geschichte der Tiermedizin*, 31-32; Karasszon, *A Concise History of Veterinary Medicine*, 112-115; and Frederick Smith, *The Early History of Veterinary Literature* (1912-1918), vol. I (London, 1976), 127.

⁸³ Master Albrecht (Albrant) was a German farrier who worked at the court of Friedrich II (Hohenstaufen) in Naples; he was also a contemporary of Friedrich's stable-master and hippological author, Giordano Ruffo; Von den Driesch, *Geschichte der Tiermedizin*, 60; Karasszon, *A Concise History of Veterinary Medicine*, 221; G. Eis, "Albrant und die Albrantforschung," *Tierärztliche Umschau* 15 (1960), 224-27 and 255-60; and idem, *Meister Albrants Roßarzneibuch: Verzeichnis der Handschriften* (Konstanz, 1960).

⁸⁴ Master Hans Brolesse is mentioned in the book: *Hierin begriffne Pis/ zaygen klärtlich an/ wie ain yedes Roß/ jung un alt sol gezämbt [. . .]*, Rcgensburg, 1539; Wolfenbüttel, HAB, 38.2 Bellica. In addition to illustrating and explaining different bits to be used to different effects on horses, the book contains an old text supposedly discovered and endorsed by this Master Hans: "Das ist nachgeschriben buechlin von ernzey der Roß oder Pferd [. . .] Ist erfunden in einem alten buechlin/ und durch maister Hannsen Broleße/ des alten Churfürsten Margraff Albrechten zu Brandenburg etc. Marstaller/ erfunden und abbobirt worden wie hernach angezeyget ist," C 3 r. Although not identified, the old text is none other than Master Albrecht's.

⁸⁵ Veit Tufft translated Federico Grisone's original work, *Gli ordini di cavalcare*, Naples, 1550, into German at the request of Fugger; *Des Edlen Hochberumbten und Rittermessigen Frederici Grisonis Neapolitani/ Künstlich beschreibung/ unnd gründtliche ordnung/ die Pferd/ [. . .] geschickt und vollkommen zu machen*, Augsburg, 1566; Munich, Staabi., Res/ 2° Gymn.17. See also *Welt im Umbruch*, vol. 1, cat. nr. 364, 361-362. Mang Seuter was Fugger's stable-

Saxony,⁸⁶ and Hans Kreutzberger who was Rudolf II's imperial groom and spur-maker.⁸⁷ Although this might seem surprising at first, particularly in light of our modern experiences of university-educated veterinarians in white lab coats, it actually makes sense when viewed historically. In her work on the history of veterinary medicine, Angela von den Driesch makes the important case that this science developed not out of human medicine as theorized and practiced in ancient Greece and Rome, but out of animal husbandry and agriculture.⁸⁸ Therefore, some of the most important hippological sources of antiquity were written not by philosopher/physicians on medicine but by landowners or rural enthusiasts on farming.

Not much is known about the sixteenth-century practicing authors mentioned above, but various sources indicate what kinds of tasks they performed. According to Hans Sachs's rhymes describing sixteenth-century occupations, the spur-maker (*Sporer*) was responsible for making bits as well.⁸⁹ Kreutzberger's book substantiates this in its careful depiction and description of over 380 different bits, and his introductory text mentions his manufacture of them. The farrier (*Hufschmied*) not only shod horses but was also involved in activities we would associate today with

master and wrote several books dedicated to his employer: *Ein schönes und nützliches Bißbuch [. . .] Durch den Ernvesten und Fürmemen Mangel Seuttern Des Wolgeborenen Herrn Marxen Fuggers Herren von Kürchberg und Weissenhorn Stallmaistern*, Augsburg, 1584; Munich, Staabi., Res/ 2° Gymn.48 and Augsburg, Staats- und Stadtbibliothek, 2°. 2 Bl. (see *Welt im Umbruch*, vol. 1, cat. nr. 367, 364-365); *Hippiatria. Ein vast Schönes und Nutzliches Buech von der Roßartzney*, Augsburg, 1599; Munich, Staabi., Rar. 2239 and Wolfenbüttel, HAB, 15 Bell. 2° (2).

⁸⁶ Johann Geissert, *Ein Ritterlich und Adelich Kunstbuch: Darinnen von Reiten/ Zeumen auch Roß Artzney [. . .] Allen liebhabern dieser Ritterlichen und Adelichen Kunst/ zu gefallen verfertigt unnd in Druck gegeben/ Durch den Ehrenvesten und Mannhafften Johann Geissert/ Fürstlichen Sächsischen Bereuter zu Koberg*, Koberg, 1615; Wolfenbüttel, HAB, 2 Bell. 2°. The book is dedicated to the Saxon dukes Johann Casimir and Johann Ernst.

⁸⁷ Hans Kreutzberger, *Warhaffte und Eygentliche Contrafactur/ und Formen der Zeumung und Gebiß [. . .] Durch Hansen Kreutzberger Sporern un burgern zu Augspurg mit sonderem fleyß erst gantz newlich zusammen getragen*, 1562; Wolfenbüttel, HAB, 15.2 Bell. 2°; and also Hans Creutzberger, *Eygentliche/ Wolgerissene Contrafactur und Formen der Gebiß [. . .] Durch Hansen Creutzberger/ Rö. Kay. M. etc. Hoffsporer gemacht*, Vienna, 1591; Wolfenbüttel, HAB, 15.1 Bell. 2° and Munich, Staabi., Res/ 2° A.vet.3.

⁸⁸ Von den Driesch, *Geschichte der Tiermedizin*, 25: "Tiermedizin ist primär keine Schwesterwissenschaft der Medizin. Sie fußt in die Tierzucht, also in der Landwirtschaft."

⁸⁹ Hans Sachs (1494-1576), *Eygentliche Beschreibung Aller Stände auff Erden*, Frankfurt am Main, 1568, Riii r.; Munich, Staabi., Res 4° P o germ. 176) 1; "Der Sporer. Ich mache Sporn von Stahl un Eyßn/ Geschwertzt un zint/ die man thut preyßn/ die doch den Gaul nit hart verletzn/ Welch Pferd sich tückisch widersetzn/ Den mach ich ein scharffes gebiß/ Das in von statten treibt gewiß/ Dem Bauwren mach ichs gröber viel/ Der es nur wolfeyl haben wil."

veterinarians: gelding stallions, removing growths, treating wounds, and the less modern practice of blood-letting.⁹⁰ Fugger generally describes the duties of the stable-master as the one in charge of the riders, farriers, and grooms, coordinating and overseeing their activities. He is also the one who bears ultimate responsibility for the well-being of the horses and is answerable directly to the stud-farm's owner. Therefore, Fugger urges his readers to find a stable-master who is intelligent, observant, trustworthy, and skilled.⁹¹

Despite the important functions these men carried out, they are sometimes the focus of negative commentary, both in contemporaneous and modern texts. The anti-hero of Pietro Aretino's play, *Il Marescalco* (the Italian equivalent of the German word *Stallmeister*), is the unnamed stable-master employed by the Duke of Mantua.⁹² Written in c. 1526 and first published in 1533, Aretino's work revolves around the cruel joke played on the stable-master by everyone from the Duke himself and his courtiers, to the stable-master's own assistants. The Duke pretends to be poised to marry off his stable-master to the perfect wife. The only problem is that the stable-master is homosexual, a fact he thinks is secret but which, in reality, is known by all. The "comedy" has a happy ending in that the bride, whom the wretched stable-master is forced to wed at the altar in the presence of the Duke and his court, turns out to be a man dressed as a woman. In the play, the part of the stable-master is complex. He is both the hapless victim of a callous prank and the object of amusement and derision for all the social groups and individuals involved. He is constructed as an unsavory character who is foolish, cowardly, and base. His character need not be a general commentary on contemporary attitudes about stable-masters. No doubt his role functioned as the perfect foil for the sharp-witted and socially elevated courtiers both in the play and in the audience. Yet his occupa-

⁹⁰ H. Sachs, Tiiii recto: "Der Schmidt. Ich huff schmidt ka die Pferd beschlagen/ Darzu die Räder/ Karn und Wagn/ Schwäntzen und Lassen ich wol kan/ Den Pferden/ die auch Schäden han/ Ich kan heyn/ Retzen und Reiden/ Den Feysel und die Angstel schneiden [. . .]." See also Marx Fugger, *Von der Gestütere*, 1584; see the following footnote.

⁹¹ Marx Fugger, *Von der Gestütere*. *Das ist Ein grundtlich beschreibung wie unnd wa man ein Gestüt von guten edlen Kriegsgrossen auffrichten/ underhalten/ und wie man die jungen von einem Jar zu dem andern erziehen soll*, Frankfurt am Main, 1584. He discusses the stable personnel in his chapter 23: "Wie man den berittnen Rossen warten soll/ damit sie lang gesundt bleiben," fol. 98-116.

⁹² Pietro Aretino (1492-1556), *The Marescalco (Il Marescalco)*, transl. by Leonard Sbrocchi and J. Douglas Campbell, 2nd ed. (Ottawa, 1992).

tion could not have been perceived as too incongruous for such a character, as otherwise the play's humor would have been derailed.

Similarly, Ruini's German translator, the physician Peter Offebach, praises Ruini's work precisely in light of the books that were available before, works that Offebach describes as "a few paltry works by horse-shoers and other lay people."⁹³ Here too a distinction is being drawn, between the practical farrier, whose written works are obviously considered scientifically and intellectually limited, and the university-educated author, whose texts are rich with knowledge.

Even in modern-day sources, stable-masters and farriers can be treated with unveiled contempt and even embarrassment. The author of a book on the history of veterinary science from 1977 characterizes hippological texts predating Ruini's book on equine anatomy as unscientific and their authors as unsavory:

From the empiric knowledge of meat-inspectors, butchers, pork-butchers, surgeons, farriers and barber-surgeons, no science could be expected. These uncultured people, often lawless feasters [sic] and hard drinkers, who even chose immoral ways to augment their wealth, were different from MDs in being ignorant of anatomy. Physicians, on the other hand, turned to comparative and animal anatomy with increasing interest.⁹⁴

In considering the evidence of negative perceptions of stable-masters and farriers, it is striking that critique is leveled not only at their supposed lack of true knowledge, but also at their social behavior, and thus, implicitly, at their social status. Thus the stable-master is constructed as someone who knows too little and drinks too much, and whose lack of science finds an interesting parallel in his lack of decorum. But instead of taking this information at face value, we should rather look to the ways such information functioned. Certainly the presentation of the stable-master in the various texts is perfectly suited to legitimize the university-educated professionals who came to define themselves partly in opposition to their practicing competitors in the health fields. To dismiss the works of the stable-masters because their state of knowledge does not fit the stereotype of the Renaissance as a time of scientific enlightenment based on new discoveries upheld by modern

⁹³ Peter Offebach, introduction to C. Ruini, *Anatomie & Medicina Equorum Nova*: "Zu unsern Zeiten hat man de Equorum Cura & Anatomia nichts besonders gesehen/ als etliche kleine Werck/ welche nur von Huffschmieden und andern leyen colligert/ und für groß werck gehalten," v verso.

⁹⁴ Karasszon, *A Concise History of Veterinary Medicine*, 270.

science, or because their authors do not fit the stereotype of the educated, cultured 'Renaissance man,' is to misunderstand the early modern period.

Thus, looking at the texts on horse-care helps us to understand the early modern era better as an age where the old and the new coexisted, when scientific discourse was anything but monolithic and unidirectional. Scientific revolutions may have occurred, but many ideas about science and its practical application were also conservative, treating traditional modes of understanding natural phenomena with respect and according them continuing legitimacy. Measured against the standard of what is known today, and how procedures are performed in the area of modern science, and against what we would expect to find in the Renaissance based on social and cultural stereotypes (i.e. dynamic new discoveries made by highly educated humanists leading in an unbroken chain of subsequent revelations to the scientific truths of today), the practice of veterinary science in the sixteenth century falls far short and, like the twentieth-century author quoted above, we can only look with scorn on such feeble attempts at enlightenment. Yet it is precisely this "failure" to live up to modern standards that is interesting to the historian since it stimulates an understanding of sixteenth-century science as richly complicated and, in many ways, profoundly retrospective. Science is a site where not only practice and theory were contested, but so were social identities and concepts of authority.

Science can also provide a site for a dialogue with art, especially in the case of illustrated scientific texts. Therefore, the study of sixteenth-century horse-care manuals also illumines the relationship between art and science. We have a tendency today to view these two practices as unequally valuable. Art may be a necessity for the soul, but our physical survival is seen to be based particularly on the natural sciences, which will protect us from everything, from deadly defects within our own genetic make-up, to errant asteroids hurtling around our solar system. This different valuation of art and science is reified in the pay-scales, teaching-loads, and campus-layouts of our present-day universities. In stark contrast, art and science in the early modern period seem to have been considered as more equal partners in a common quest to communicate something about ways in which to understand the world. In fact, science needed art when it turned to the visual image for illustration. And although the image may have clarified the text, it also spoke its own language, creatively contaminating scientific discourse with art. That language is one of iconographic tradition and artistic training.

This is where we need to turn again to the artists' manuals discussed in the previous section. The majority of artists who provided woodcut illustrations for the horse-care texts remain unknown. Their work for the most part is unsigned and has not been attributed on the basis of style by art historians to individual artists. They probably came from the ranks of qualified artists, the names of whom fill the pages of local guild records but whose actual work remains unidentified. It is at just this sort of artisanal level, to this kind of local artist, that the manuals on how to draw horses were pitched. In some instances, which will be discussed later, the very same woodcut illustration used in an artists' manual is included within a horse-care text. However, for the most part I am suggesting that when artists provided illustrations for these texts, they constructed images of horses that were informed by the type of training exemplified by (but not necessarily directly borrowed from) the artists' manuals. Part of that training would also include familiarity with the iconographic traditions inhering in visual images of horses; that is, not only basic poses and stances, but also fundamental ideas about the social, political and artistic values associated with equine imagery. A similar familiarity may be posited for some of the potential readers of these books and pamphlets on the basis of the ubiquity of equine imagery in early modern visual culture.⁹⁵

If we look again at woodcuts from Beham's, Schoen's, and Lautensack's manuals, we see that the poses in which the horses are placed are not only very limited, they are also very similar, particularly the horse seen lengthwise in strict profile, raising alternating hind- and forelegs (this is the two-beat gait of the trot in which the fore is here raised higher than the hind). By this time, this pose has become a dominant artistic formula for representing a horse in varying media. There are indeed variations on this main theme: sometimes only the foreleg is raised, and less often all four legs are on the ground. But this basic pose, and the attendant proportions, remains definitive for the depiction of the horse in sixteenth-century printed sources.

No doubt this pose was developed out of a fairly limited number of ways in which a horse might be represented. The reason that it became as formulaic as it did was probably because, like the ancient Egyptian canon of proportions, it allowed for a view of the body that was deemed

⁹⁵ For a demonstration of that ubiquity, see the catalogue by Camins, *Glorious Horseman* and Liedtke, *The Royal Horse and Rider*, and *Die Pferde von San Marco* (Berlin, 1982), 202-66.

most characteristic as well as visually comprehensible. Just as certainly, this pose did not find its first expression in the sixteenth-century artists' manuals, as equine imagery from at least the previous century already represented horses perambulating about in such fashion.⁹⁶

However, when the image of the horse enters into the service of illustrating scientific texts, it does so in the guise of the artistic image that dominated the representation of the horse from what we anachronistically would call high art to applied art and everything in between. This manner of representing horses was being worked out already at least in the fifteenth century and became increasingly codified and formulaic in the sixteenth. That the illustrations are primarily from the artistic realm also makes sense, because the people who made them were trained in art and not in science or in horse-care. As fundamentally artistic images, these illustrations are not mutely obedient to the text, but are instead multivalent signs richly resonating with notions of art, power, and social prestige, no matter what their aesthetic quality. Thus, when we turn to the sources on horse-care, we find in the images a mutually elucidating dialogue between art and science that affords their readers/owners access to both.

One of these sources, *Master Albrecht's Little Book of Horse Remedies*, would have featured prominently on any early modern bestseller list, had there been such a thing. Written originally around 1250 by the German farrier Master Albrecht, it contains treatments for the most common equine ailments that Albrecht presumably encountered in his work at the stables of Friedrich II's court at Naples. To judge from the number of copies made, this work was extremely well known and influential in its wide-spread dispersion. Von den Driesch states that there are approximately 200 manuscript copies and that she cannot even estimate the large number of printed copies from the sixteenth through eighteenth centuries.⁹⁷ Not only was Master Albrecht's book-

⁹⁶ Fifteenth-century examples include Andrea del Castagno's equestrian monument of Niccolò da Tolentino, 1455 (fresco, Florence Duomo), Benozzo Gozzoli's Procession of the Magi, 1459 (fresco, Chapel of the Palazzo Medici-Riccardi, Florence), and the Adventus of the Bishops at the Council of Constance, woodcut illustration to *The Council of Constance*, Augsburg, 1483.

⁹⁷ Von den Driesch, *Geschichte der Tiermedizin*, 60. My observations are based on knowledge of the following editions of Master Albrecht: *Ein gut ertzneybuchlin der roß Auch wie man ei yeglich pferd erkenne sol*, Augsburg, 1485 (Wolfenbüttel, HAB, 11.3 Oec; *Roßerzney buchlein. Auch wie man yekliches pferd erkenne un probieren soll*, Augsburg, 1513 (Wolfenbüttel, HAB, Mw1); *Dieß buchleyn saget wie man pferdt ertzneyen und ein yeglich pferdt erkennen sol*, Nuremberg, c. 1519 (Munich, Staabi., Oecon.2159a); *Dieß buchlein saget wie man pferd*

let published separately, but the text was also included within other hippological tracts, sometimes without identifying it as such. It appears for example in *Hippiatria* [. . . or] *The Art of the Stable-Master*, which itself went through several editions in the course of the sixteenth century.⁹⁸

In terms of the information in its text, *Master Albrecht's Little Book* is not scientific in the modern sense. It is not written according to carefully controlled experiments or based on theoretical knowledge, and some of the prescribed remedies strike the modern reader as obviously misinformed. Instead, the text is based on the thirteenth-century farrier's practical experience and personal observations of mostly exterior phenomena. The booklet begins with an explanation of how to discern a good horse from a bad one by its color, conformation and proportions. We learn, for example, that a horse whose coat is only one color (black, chestnut or white) is usually very good at working, while one whose coat has white patches mixed in cannot be relied on; or if a horse has a hairy head, it will tend to get fat.⁹⁹ The assumption here is that the outer characteristics of the horse reveal to the initiated clues about the animal's inner qualities. The horse's entire body thus offers up a complex semiotic riddle, with each physical feature redolent with signification for those initiated in the code. The desirability of understanding this code was based at least partially on economics: to purchase a horse that would work successfully, be it in agriculture, trade, or warfare, would significantly contribute to its master's livelihood.

Part of working successfully meant having a healthy horse. The bulk of Master Albrecht's booklet is taken up with brief descriptions of equine ailments and their corresponding remedies. For example, if the horse refuses its feed, Master Albrecht recommends rubbing its teeth with a

ertzneyen/ und ein yegklichs pferd erkennen sol, Nuremberg, c. 1520 (Munich, Staabi., Res./ 4° A.vet.0f); *Rossartzneybuchlein auch wie man eins yegklichen pferds oder rossz eygenschafft erkennen und probieren sol*, 1527 (Wolfenbüttel, HAB, 276 Quod.4); *Dyß Biechlein saget wie man pferd ertzneyen unnd ein yegklichs pferd erkennen soll etc.*, 1530 (Munich, Staabi., Res/ 4° A.vet.0g); and Frankfurt, 1565 (Munich, Staabi., 4 Oecon.400,8).

⁹⁸ *Hippiatria: De cura, educatione & institutione equorum, una cum uariis ac novis frenorum exemplis. Marstallerei. Von Erziehung/ Arznei und Abrichtung der Roß*, Frankfurt, 1550 (Wolfenbüttel, HAB, Hn106); Frankfurt, 1565 (Munich, Staabi., Res/ 4° Oecon.185m); Frankfurt, 1570 (Munich, Staabi., Oecon.185n); Frankfurt, 1582 (Munich, Staabi., Res/ Oecon.2171w). Master Albrecht's text is also included in *Eine Neuwe und bewerte Roßartzney* [. . .], Strasbourg, 1583 (Munich, Staabi., Res/ 2° A.vet.3).

⁹⁹ For example, Master Albrecht, Wolfenbüttel, HAB, 11.3 Oec: "Gantz schwarz on all ander farben ganz rot gacz weiss die müge wol arbeyten [. . .]. Weisschet sind im veld untreu [. . .]," ii recto-verso; and "Hat ein roß vil hare am kopf und hert des wirt geren vaist," ii verso.

mixture of garlic and pepper.¹⁰⁰ This mixture no doubt served to irritate the horse's sensitive oral tissues, provoking it to put food into its mouth in an effort to rid itself of the irritant. Clearly, this is not a source concerned with identifying the underlying causes of ill-health (what has made the horse lose its appetite?) or of understanding the nature of disease, but is instead about practical solutions to what are conceived as practical problems. In terms of its text, the re-issued, early modern editions of *Master Albrecht's Little Book* provide an illustrative example of the practice of science in the early modern period as deeply rooted in the knowledge and experience of the Middle Ages.

The illustrations to *Master Albrecht's Little Book* are limited to the various title-pages of the different editions. This is true of most of the hippological texts from the sixteenth-century with the exception of some luxury books like Marx Fugger's, the German translations of Grisone's riding manual, the copiously illustrated bit books, and, to be addressed below, Ruini's *Anatomia*. These title-page images do not function as diagrams strictly relating to the text as do other scientific illustrations in, for example, sixteenth-century books on botany and human anatomy,¹⁰¹ but instead serve a number of different purposes. At the most obvious level, the title-page woodcuts signal the books' basic contents. In the case of *Master Albrecht's Little Book*, the title-page illustrations unfailingly depict a bridled horse, thus helping to identify the subject-matter of the book. But the horse can also be seen as the object of the science within the book, and the usually well-fed and contented-looking creatures posed on the title-pages could stand in for Master Albrecht's "patients" attesting to the success of his methods.¹⁰² The image of the horse thus becomes a part of scientific discourse as proof of its efficacy. The image, however, is also part of artistic discourse, and the very formulaic quality of its composition betrays its connection to artistic and iconographic traditions. In the title-page illustrations, the horses are positioned in poses similar to those found in the artists' manuals and in countless equestrian images preceding the manuals: parallel to the picture plane, with

¹⁰⁰ Master Albrecht, Wolfenbüttel, HAB, 11.3 Oec., viii recto.

¹⁰¹ See examples cited and illustrated in Ackerman, "The Involvement of Artists in Renaissance Science," 94-129.

¹⁰² The image of the healthy horse is in contradistinction to the later illustrations of ill horses which became part of horse-care manuals from the eighteenth century on. In the image of the so-called "Fehlerpferd (the defective horse)," a single horse is shown simultaneously manifesting several different diseases and ailments; see Von den Driesch, *Geschichte der Tiermedizin*, 71.

left foreleg raised. Clearly, the same basic image of the horse is being used repeatedly, borrowed from one edition to the next. Although applied to a scientific text and significant of that science's success, the source of this image resides not in the scientific, but in the artistic realm. Thus the viewer is confronted by an image that straddles both artistic and scientific discourses, serving to educate the viewer simultaneously about art (its visual traditions) and science (its application to the horse and its efficacy). Perhaps some viewers recognized the iconographical indebtedness of the title-page illustrations to equestrian imagery featuring saints and political leaders, abundant in both public and private media in the early modern period. As related to such imagery, the presence of the horse on the title-pages would function as a signifier of virtue, prestige and power, characteristics the viewer might feel encouraged to apply to himself as purchaser of the text and image, and presumably as owner of a horse. Similar dynamics are at play in modern-day car advertisements where the purchase of a particular automobile is represented as tantamount to acquiring the complete lifestyle, carefully constructed in the ad by image and intimation, supposedly accompanying the vehicle. In Master Albrecht's text, the commodity on offer, with all its attendant notions, is knowledge leading to a healthy, robust and hard-working horse. Purchasing the booklet with its illustrated title-page iconographically related to images in manuscripts, frescoes, panel-paintings and sculpture might also have served as an equivalent for acquiring a work of art produced in these more expensive media. Lastly, from a historical point of view, the illustrated title-pages offer clues about the intended readership of Master Albrecht's booklet and, in one instance, about attitudes towards the people who worked with horses.

In discussing these images, it is my assumption that the artists who made them probably never read the texts. Instead, they were most likely given fairly exact instructions, either verbally or visually, as to what to depict. The insistently formulaic and also generic nature of the images leads me to this conclusion. But I am also assuming that the artists knew at least a little something about horses. They could probably generally differentiate, for example, between a sick horse and a healthy one, and between a cart horse used for labor by peasants, and a riding horse used for recreation and as a signification of status by wealthy burghers. This assumption is based on what the traffic must have been like on streets in early modern cities, no doubt featuring everything from farmers bringing in produce to sell at market, hauled in by horses, to princely processions on horseback. Because of the importance of the

Dem Ackergaul.



Hie grasset eines Bawren Kossz/
 Neben ein Baum/bey einem Moss.
 Dasselb weil es lang stund im Haus/
 Schlug mans ein mal auff Weyd hinauf.
 Damit es auff den Sommer wer/
 Zu aller arbeit wackerer.
 Zu pflügen/ackern/tüngen/egen/
 Holz heim zu führen auff den Wägen.
 Welch arbeit all/so schwer vnd saur/
 Dem Kossz aufflegen thut der Baur.
 Eins Bawren Kossz darumb mans neit/
 Vor andern Pferd mans leichtlich feit.

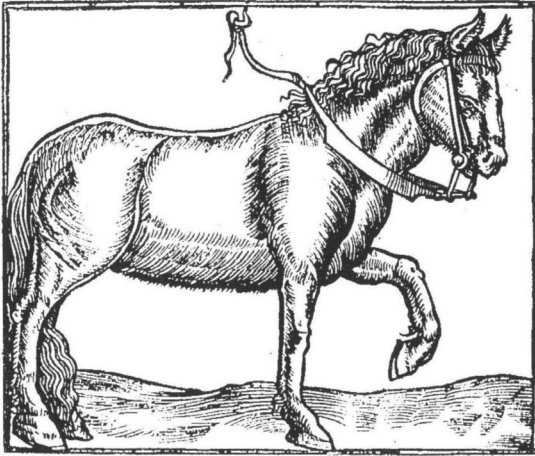
Dem

Figure 4. Jost Amman, "On the Plough Horse," woodcut illustration in *New Book of Animals*, Frankfurt, 1569, Niii. Munich, Bayerische Staatsbibliothek, Res/4° P.O. germ. 176 C³.

horse in daily life, especially for transport and travel, the artist would have had easy visual access to the animals. In Jost Amman's woodcut illustrations to the *New Book of Animals* from 1569, for example, he includes the depiction of a plough horse (*Ackergaul*), a rickety, decrepit creature surrounded by flies (figure 4).¹⁰³ The text, appearing directly beneath the woodcut, describes the many laborious chores the animal has to perform and concludes: "Therefore it is called a farmer's horse;

¹⁰³ *Ein neuw Thierbuch*, Frankfurt, 1569; Munich, Staabi., Res./ 4° P. o. germ.176(3). Jost Amman, 1539-1591; see F.W.H. Hollstein, *German Engravings, Etchings and Woodcuts ca. 1400-1700*, vol. II (Amsterdam, 1955), 8-53.

Das Viechlein saget
 wie man Pferd ertzneyen
 vnd ein yegklichs
 Pferd erkennen
 soll ꝛc.



M. D. .XXX.

Figure 5. Title-page with woodcut illustration to *Master Albrecht's Little Book of Horse Remedies*, 1530. Munich, Baycrische Staatsbibliothek, Res/4° A. vet. Og.

you can easily recognize it in comparison to other horses.”¹⁰⁴ However, iconographic tradition and artistic training and precedents are just as important, if not more so, than real-life observation and personal experience in influencing the depiction of horses in the images to be discussed below. Therefore, the representation of horses is most likely less a matter of the artist's conscious decision about breed and conformation (based either on personal knowledge or textual indications), and more a matter of the artist's training, ability, and access to visual models.

The title-page illustrations to the 1513 and 1530 (figure 5) editions of *Master Albrecht's Little Book* are very simple, depicting a bridled horse

¹⁰⁴ *Ein neww Thierbuch*, “Eins Bawren Rossz darumb mans nent/ Vor andern Pferd mans leichtlich kent,” Niiii.

against a blank background, standing on uneven ground, in profile, with its left foreleg raised.¹⁰⁵ Judging from the horse's weight, its powerful physique and its shiny coat, the animal is healthy and in good condition. In terms of the woodcut as a print, the horse's figure is circumscribed by a heavy outline with interior modeling indicated by regular, parallel lines of equal length. In short, the quality of the woodcut is mediocre. The horse, although healthy, is bulky, unrefined in its conformation, and slightly shaggy. The quality and paucity of the illustration, along with the type of horse depicted (perhaps simply the result of a less sophisticated artist), indicate that the booklet was intended for a humbler audience. The brief text, with its emphasis on which horses are the most hard-working, and the down-home character of the remedies for common ailments, suggest the same: the booklet was for those people who had horses for work rather than for pleasure. Yet the title-pages from these two editions also indicate that there was a range of buyers for this text: the woodcut to the 1513 edition was hand-colored, which would have added to the cost of the booklet's production, and thus would have raised its price.

This supposition about a differentiated readership is strengthened by the title-page illustration of the 1527 edition (figure 6).¹⁰⁶ Here the composition is exactly identical to the others; a bridled horse is shown in profile, facing right, with its left foreleg raised. But the aesthetics are completely different. The background is slightly differentiated by parallel hatchings and even the ground has more definition, with its individual rocks, plant and hillock. But it is the horse itself that is most dramatically different. Its small, pointed ears lie neatly and cleanly against its head; the focused eye, the way it works the bit in its mouth, and the arched neck and tail all lend the figure tremendous energy and power. Its breeding thus appears of a different caliber than that of its stolid and graceless counterpart from the other editions, an observation reinforced by its carefully groomed mane and tail, and its more decorative bridle and reins. The quality of the woodcut is also superior to the others, with volume, depth, light and shade evoked more naturalistically and in more nuanced gradations. Perhaps the price of this edition was higher because of the more proficient (and thus more expensive?)

¹⁰⁵ Title-pages to: Meister Albrecht, *Roßerzney biechlein* [...], Augsburg, 1513; Wolfenbüttel, HAB, Mw1; and Meister Albrecht, *Dyß Biechlein saget wie man pferd ertzneyen* [...], 1530; Munich, Staabi., Res/ 4° A.vet.0g.

¹⁰⁶ Title-page to: Meister Albrecht, *Rossartzneybuchlein* [...], 1527; Wolfenbüttel, HAB, 276 Quod.(4).

Ross artzneybüch

lin auch wie man eins
yegklichen pferds oder rossz
eygenschaftt erkennen ond
probieren
sol.

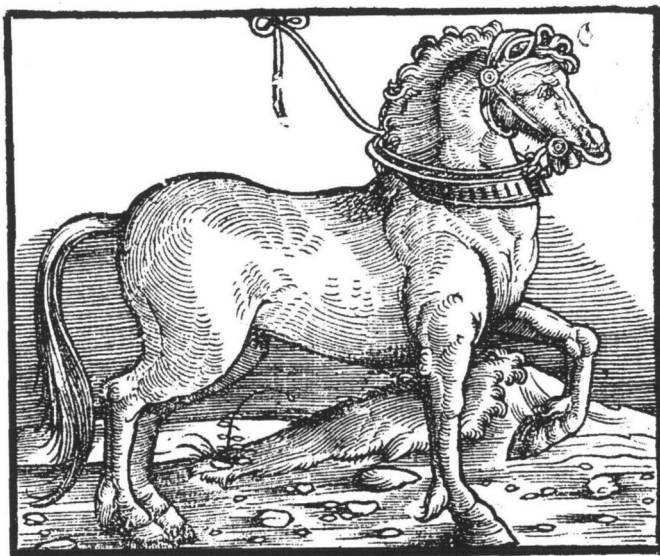


Figure 6. Title-page with woodcut illustration to *Master Albrecht's Little Book of Horse Remedies*, 1527. Wolfenbüttel, Herzog August Bibliothek, 276 Quod. (4).

Dieß buchlein saget

wie man pferd ertzneyen/vnd ein
yegklichs pferd erkennen sol.



Figure 7. Title-page with woodcut illustration to *Master Albrecht's Little Book of Horse Remedies*, c. 1520. Munich, Bayerische Staatsbibliothek, Res/4° A. vet. Of.

artist employed to make the woodcut. The 1527 edition would have appealed to a buyer who had aspirations for his horses other than ploughing fields or carting loads.

The title-page illustration of the c. 1520 edition of *Master Albrecht's Little Book* provides commentary more on Master Albrecht than on his equine patients (figure 7).¹⁰⁷ Like the images of the other editions, a bridled horse is depicted, facing right with its left foreleg raised. But this

¹⁰⁷ Title-page to: Meister Albrecht, *Dieß buchlein saget wie man pferd ertzneyen* [...], Nuremberg, c. 1520; Munich, Staabi., Res/ 4° A.vet.Of.

horse is also saddled and it is tied by its reins to a simple timbered construction such as one encounters in other images showing horses undergoing treatment.¹⁰⁸ The scene appears to be taking place out in the country. In the background, the towered walls of either a city or a large castle complex can be seen. Master Albrecht is present. The largest figure in the composition, he stands in three-quarter view at the right margin of the woodcut, looking at the horse, which has been placed at the left margin, and gestures towards it with his right hand. Interestingly, we are given indications about Master Albrecht's training and social status that would, however, most likely contradict the actual training and status of not only the historical thirteenth-century farrier, but also of his sixteenth-century counterpart. In the woodcut, Master Albrecht is dressed in the robes of an academic and wears, in particular, the cap of a scholar. His attire is similar to the costume worn by medical doctors and scholars in images such as those found in Sebastian Brant's *Ship of Fools* (1494).¹⁰⁹ One of the attributes of physicians in visual imagery is the glass vessel for inspecting the patient's urine, held in the figure's hands.¹¹⁰ In the c. 1520 woodcut, Master Albrecht does not hold a urine glass, but he does grasp in his left hand a jar presumably containing some kind of medicinal ointment (several recipes for which are found within the text). In addition, Master Albrecht does not actually touch the horse. Instead, the animal is handled by an assistant, who, by his smaller size and simpler clothing, is represented as the social inferior of Master Albrecht. This division of labor between the educated scholar, who has the knowledge and who directs the course of action, and the socially inferior assistant, who does the dirty work, is also found, for example, in images of the scholarly anatomist who sits in his cathedra in front of an open book holding disquisitions, while the assistant fishes around in the open body of a human cadaver for the appropriate

¹⁰⁸ A similar construction, for example, appears in Jost Amman's woodcut in *Ritterliche Reuterkunst*, Frankfurt, 1584; Munich, Staabl., 2° Occon.48)2. The author is mentioned on the title-page as "den edlen gestrengen Herrn L.V.C. gewesener keyserlicher Maiestat Stallmeister." The woodcut illustrates the chapter on bloodletting, which in the woodcut is being performed by the farrier in front of a simple timbered structure with gabled roof that closely resembles the one in the c. 1520 Master Albrecht frontispiece.

¹⁰⁹ See for example the woodcut illustrations to the chapters on "Von unnützem Studieren," "Von Kranken, die nit folgen" and "Von nährischer Arzneykunst" in Sebastian Brant, *Das Narrenschiff* (1494), 2nd edition (Leipzig, 1979), 90-91, 114-117, and 154-155 respectively.

¹¹⁰ Nancy Siraisi, *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice* (Chicago and London, 1990), 28.

organ.¹¹¹ But the historical Master Albrecht was not a university-educated physician, nor was the sixteenth-century farrier or stable-master. Nonetheless, certain claims are being made here in the woodcut about the status and respectability of the horse-care specialist. This presentation of Master Albrecht as a learned man also helps to legitimize the information presented in the booklet, and thus to make it more sellable. The saddled horse might also indicate the readership aimed at here, since it is clearly not an animal of labor, but one of expensive recreation, to judge from its elaborate tack; presumably a gentleman has sought out the assistance of the learned scholar for whatever ails his riding horse.

Despite the various aesthetic and narrative differences in the title-page illustrations discussed, the pose of the horse in each is always the same. We find this identical pose exactly repeated in the illustrations of books on horse-care, even when it makes very little narrative sense. It is the repetition of this pose, and its narratively illogical nature, that point to the use of iconographic models from the realms of art.

This can be seen, for example, in a book printed in Regensburg in 1539.¹¹² It combines illustrations and explanations of different bits with a section on horse-remedies found and tried out by Albrecht of Brandenburg's stable-master, Hans Brolesse. On the book's illustrated title-page, a groom bridles a horse while the bit-maker, holding several exemplars, looks on. Even in the act of being bridled, the horse elegantly elevates its foreleg and strikes that familiar pose. A second title-page marks the beginning of the section on horse remedies, which is actually a verbatim copy of Master Albrecht. In the illustration, a stable-master opens the horse's mouth, presumably in order to see what ails it, while the horse obediently stands in strict profile with one of its forelegs raised. This is clearly a case where form does not follow function. The horse has not been posed in this attitude because that is what horses do in such situations (quite the contrary in fact!) but because that is how artists were trained to represent them. This visual formula for depicting horses, originating within the realms of art, was clearly deemed

¹¹¹ For example, Siraisi, *Medieval and Early Renaissance Medicine*, 87, reproduces a woodcut from a 1493 edition of Mondino de' Liuzzi's *Anatomy* in which this division of labor is represented. It also appears in a woodcut of the 1493 edition of Johannes Ketham, *Fasciculus di Medicina*, reproduced by French, *Dissection and Vivisection*, 147 (additional illustrations with the same social dynamic can be found on pages 44, 45, 95, 99 and 148).

¹¹² *Hierin begriffne Pis/ zaygen klärlich an/ wie ain yedes Roß/ ung un alt sol gezämt [. . .],* as in note 84.

appropriate and satisfactory for inclusion in such texts as it is found in so many different books.

Yet another example of the use of this formula can be seen on the title-page of *Hippiatria* [... or] *the Art of the Stable-Master* (figure 8).¹¹³ Beneath the title, fully given in both Latin and German, the woodcut illustration depicts a bridled horse raising its foreleg. At its head, a man in fashionably slit clothing, a feathered cap and closely fitting stockings seems to be checking the way the bit lies in the horse's mouth. Two other men, similarly fashionably attired with capes, feathered caps and sleek hose, stand behind the horse and presumably, to judge from the book's title, discuss the animal and the state of its training, health and tack. The horse's body is no longer parallel to the picture plane as it has been in all of the illustrated title-pages discussed thus far, but has instead been placed to allow a roughly three-quarter view, thus indicating an artist technically proficient in foreshortening and perspectival views. The dress of the men, the inclusion of a parallel Latin text, and the spatially more complicated woodcut all indicate that this book was aimed at a more educated and socially elevated class of readers than those of some of the editions of *Master Albrecht's Little Book*. And yet, despite the alternative displacement of space and the different audience, the pose of the horse is the same as all the others. And Master Albrecht's ubiquitous text itself is also included in this book, following the catalogue of bits, in an arrangement of information similar to that of the 1539 book from Regensburg discussed above. In *Hippiatria* as well, a secondary title-page has been added in order to signal a different section of the book (figure 9). Master Albrecht is named here as the author. Even though his text has not been updated, Master Albrecht himself has been; the title refers to him, mistakenly, as the farrier to Friedrich III (of Habsburg; 1415-1493) even though he actually worked for Friedrich II (of Hohenstaufen; 1194-1250). The illustration to this secondary title-page comes directly out of Sebald Beham's artists' manual from 1528 (figure 2) and even bears the Nuremberg artist's monogram directly below the ground line between the horse's hind- and forelegs.

Another of Beham's woodcuts is found in *The Knightly Art of Riding* (Frankfurt, 1584) interspersed amongst woodcuts by Jost Amman, some of which also appear in Marx Fugger's *On the Breeding and Raising of*

¹¹³ *Hippiatria. De cura, educatione & institutione equorum, una cum uariis ac novis frenorum exemplis. Marstallerei. Von Erziehung/ Arznei und Abrichtung der Roß*, as in note 98. The title-page woodcuts are identical in all editions.

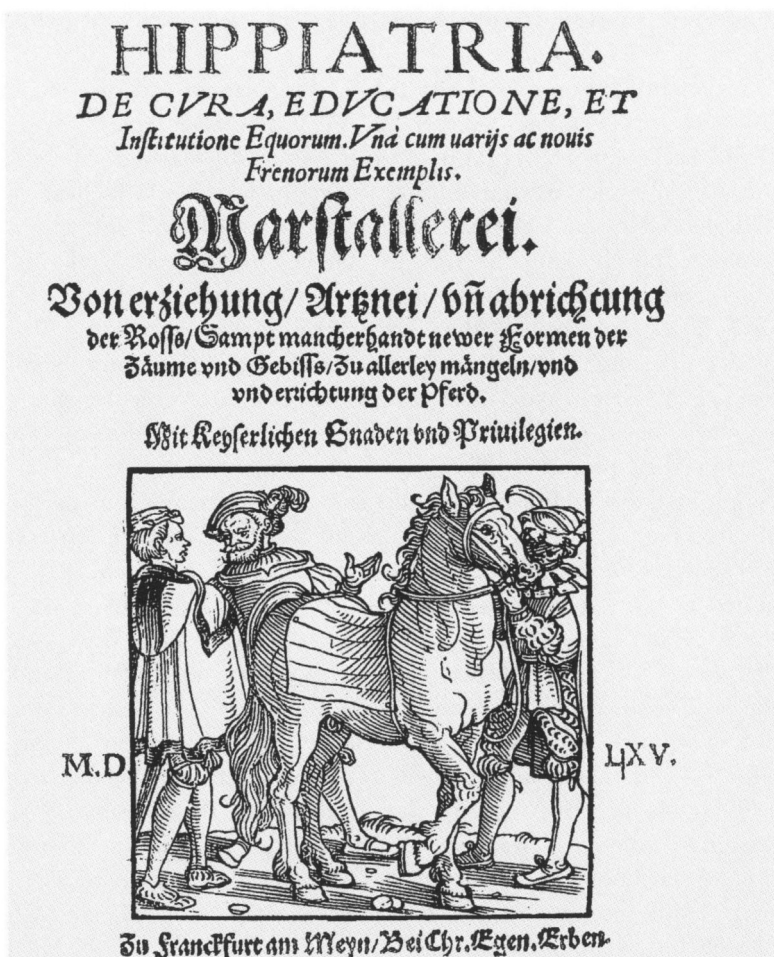
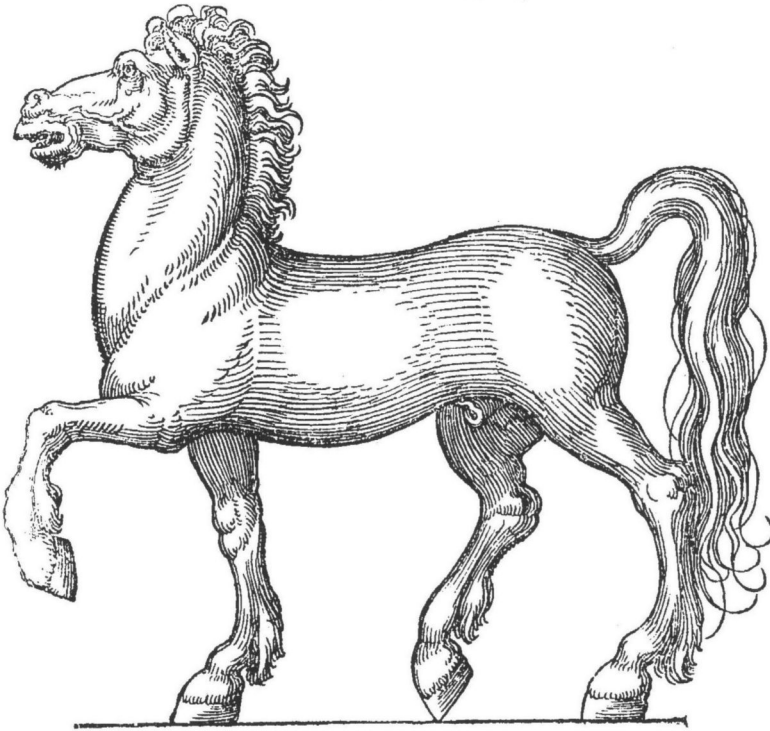


Figure 8. Title-page with woodcut illustration to *Hippiatria* [... Or] *the Art of the Stable-Master*, Frankfurt, 1565. Munich, Bayerische Staatsbibliothek, Res/4° Oecon. 185m.

Rosß artzney/von Meister Albrecht
Schmid/Keyser Friderich/des dritten/
Hochlöblicher gedechtenuß/Karstaller bewes-
ret/vnd nachgelassen.



HP

Güte

Figure 9. Sebald Beham, Trotting Horse, woodcut illustration used in secondary title-page for section on *Master Albrecht's Little Book of Horse Remedies* included in *Hippiatria [...] Or the Art of the Stable-Master*, Frankfurt, 1565, p. 88. Munich, Bayerische Staatsbibliothek, Res/4° Oecon. 185m.

Horses (Frankfurt, 1584). In addition, the title-page illustration from *Hippiatria* is also included in *The Knightly Art of Riding*. The direct borrowing of equine imagery from one hippological text to another reveals a dense network of inter-visibility, to modify slightly the concept of inter-textuality. In some instances, the appearance of the same woodcuts in more than one book can be explained by production. As was the case with *The Knightly Art of Riding* and Fugger's *On the Breeding and Raising of Horses*, both books were printed by the same publisher in the same year, and both were no doubt expensive. Their lengthy texts are beautifully printed on large-sized folios and lavishly illustrated. Using some of Amman's woodblocks for both books would have saved time and money. The inclusion of woodcuts from other earlier sources, like Beham's manual and the *Hippiatria* title-page, however, need to be explained differently, as their individual appearance would not have greatly affected the cost of production. Perhaps they were included precisely because they resonated with earlier artistic and hippological discourses and might even have referred to texts already owned by or familiar to the reader/horse-owner/equine enthusiast. The appearance particularly of Beham's woodcuts in these various hippological texts indicates that the methods and aesthetics of equine imagery demonstrated in the artists' manuals were indeed incorporated within these books dealing with, among other things, the science (as it existed then) of horse-care.

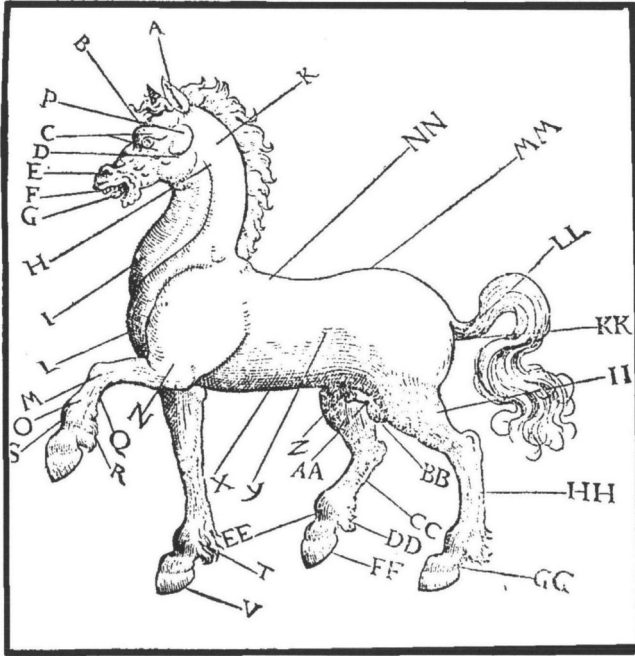
Beham's work also certainly influenced another manifestation of equine imagery in scientific texts: the so-called little blood-letting horse (*Das Laßbroßlein*).¹¹⁴ This image appears for example in the 1575 German translation of Ruellius (figure 10).¹¹⁵ Here another artist has interpreted Beham's trotting horse with the head above the vertical and the mouth open (figure 2); this artist's contour line is unrelentingly regular and schematic compared to Beham's, existing more as a simple decorative line than as a subtle, nuanced circumscription of a horse's richly mod-

¹¹⁴ See also Von den Driesch's discussion of the *Laßbroßlein* in *Geschichte der Tiermedizin*, 63, and 70-71. She also notes the influence of Sebald Beham but wants to see some prints referring back to Albrecht Dürer. Although Beham might originally have gotten ideas and even material surreptitiously from Dürer's studies, as Camerarius claims, the proportions and particular poses at least of the sixteenth-century *Laßbroßlein* are clearly indebted to Beham, not Dürer. Making reference to a well-known artist such as Dürer no doubt functions as a way to legitimize a particular study and is a strategy often encountered in discussions of material that has been previously deemed aesthetically second-rate, as if the author wishes her subject to slip into acceptance on the coat-tails of a famous artist.

¹¹⁵ Johannes Ruellius, *Roßartzney*, Nuremberg, 1575, fol. 190r.

Das Bröflein / in welchem alle

Adern / derer in den vor:gehenden zweyen Büchern
gedacht / mit vnterschiedlichen buch:
staben bezeichnet.



Erklärung

Figure 10. "Little Blood-Letting Horse," woodcut illustration in Ruellius, *Equine Medicine*, Nuremberg, 1575. Wolfenbüttel, Herzog August Bibliothek, 20 Bell. (2).

ulated musculature. His interior modeling is also minimal and abrupt; for example, he has turned Beham's alternating areas of light and shadow, describing the flexion of the neck muscles at the shoulder, into a harsh black line. Nonetheless, it is essentially Beham's horse, as the pose and the proportions proclaim. The purpose of the image is to indicate where the points are located on the horse's body for blood-letting. These points are indicated by lines joining them with letters which are enumerated in a key. The image clearly serves to illustrate scientific concepts and techniques discussed in the text. But it is also an artistic image, informed by the iconographic traditions of equine imagery and

by the training of the artist as exemplified in the printed manuals by Beham, Schoen and Lautensack. In fact, it is arguably the aesthetics rather than the science of the little blood-letting horse images that have stood the test of time. Von den Driesch discusses the practice of early modern phlebotomy as largely corrupt and degenerate in terms of its original purpose in late antiquity as a diagnostic aid. Applied as it was in the early modern period prophylactically and for everything and anything that ailed a horse, this practice would have caused more harm than good on many occasions.¹¹⁶ Within this context, von den Driesch also discusses the little blood-letting horse images and concludes: "Yet, for all the admiration for the aesthetics of these images, we should not forget the mistaken assumptions that lurked beneath them."¹¹⁷ Although the scientific content of these images does not impress the modern historian of veterinary science, the aesthetics nonetheless remain compelling.

The fusion of art and science is still profoundly evident in Carlo Ruini's book on equine anatomy, a book heralded by historians as immensely influential on the future direction of veterinary science, a colossal success, and whose publication date (1598) marks "the year from which the renaissance of veterinary medicine is reckoned."¹¹⁸ In important ways, Ruini's work is indeed new. It provides detailed anatomical studies of the horse, certainly based on dissection, and not seen before in print. The level of anatomical knowledge conveyed in both text and image is considered ground-breaking.

And yet, even in this much lauded scientific book, the illustrations not only visually explain the text, they are also informed by iconographical traditions that stubbornly cling to the visual image. In the woodcut depicting the equine skeleton, the "horse" strikes a pose identical to many of the images discussed thus far; facing right, rendered in strict profile, the skeleton politely elevates one foreleg (figure 11). The equine musculature system is illustrated by an *écorché*-horse seen at a roughly three-quarter view from the rear. Although seen from a different angle, this is essentially Sebald Beham's horse, alternating hind- and forelegs raised, neck arched, ears pricked forward, and mouth open.

¹¹⁶ Von den Driesch, *Geschichte der Tiermedizin*, 62 and 70.

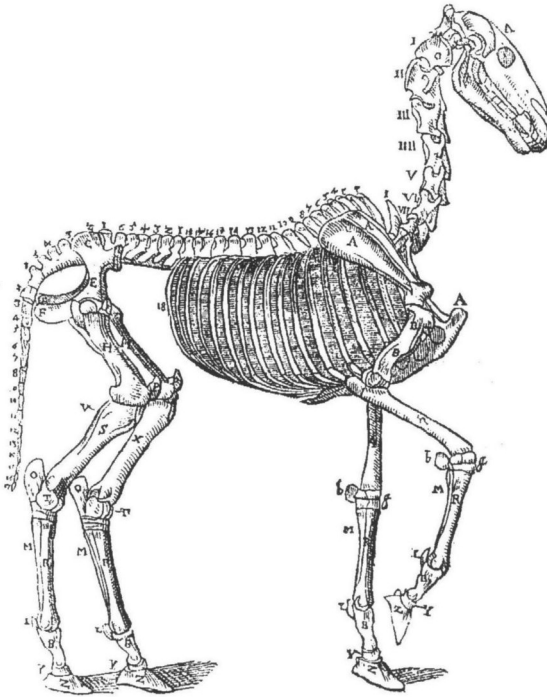
¹¹⁷ Von den Driesch, *Geschichte der Tiermedizin*: "Doch bei aller Bewunderung für die Ästhetik dieser Bilder dürfen wir nicht vergessen, welcher Irrglaube sich dahinter verbarg," 63.

¹¹⁸ Karasszon, *A Concise History of Veterinary Medicine*, 253; see also Von den Driesch, *Geschichte der Tiermedizin*, 74-75.

der Anatomy der Pferde.

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V



X ij Die

Figure 11. Skeleton of a Horse, woodcut illustration in Carlo Ruini, *Anatomia et medicina equorum nova*, translated by Peter Offenbach, Frankfurt, 1603 [1598], fol. 243. Wolfenbüttel, Herzog August Bibliothek, 15 Bell. 2°.

In their representation of the dissected subject as alive and active, the illustrations to Ruini's book are similar to those in Andrea Vesalius' *De humani corporis fabrica* (1543), in which human skeletons or écorchés figures walk, stand, sit and gesture in a variety of life-like poses.¹¹⁹ These

¹¹⁹ Von den Driesch also sees this relationship, *Geschichte der Tiermedizin*, 75. For a discussion of the illustrations to Vesalius' works and their function, see French, *Dissection and Vivisection*, 170-177.

poses certainly help to explain how the muscles and bones, for example, function in terms of one of the basic activities that define a living being, namely locomotion. And yet the very nature of these poses is as much socially and aesthetically defined as it is anatomically; the way in which these stances are read and understood depends as much on the scientific text as it does on the viewer's cultural and visual vocabulary. Indeed, this persistent view of the body, whether human or equine, as simultaneously the object of science and of aesthetics highlights the nexus between art and science in early modern culture. So do the assumptions revealed on the title-page text of Offenbach's translation of Ruini's work.¹²⁰ The text recommends this book on equine anatomy and horse-care as useful not only to those who own and to those who work with horses, but also to those who paint and sculpt them: in other words, to artists. The production of art and the practice of science have become very close here, and the anatomy book has become another kind of artists' manual. In so doing, Ruini's text and its underlying assumptions indicate yet another manifestation of a scientific aesthetic, now no longer based only on mathematical proportion and perspective, but also on anatomical correctness.

IV. *Conclusion*

Looking at prints of horses in sixteenth-century artists' manuals and equine health-care books within their visual, textual and historical contexts allows us to understand important aspects of art production and scientific practice in the early modern period. Compared to historiographically canonical imagery and texts, these hippological sources may be considered liminal, but they are also greatly illuminating. For the most part written by so-called second-rate artists and by workers within what might be loosely termed the equine industry, and read and viewed by a diverse audience, these texts and their illustrations shed light on assumptions about art and science held by a range of people, from local artisans and craftsmen professionally involved with equine imagery, to the wealthy and the noble socially involved with equine ownership, to the farmer or carter economically involved with equine labor. In focus-

¹²⁰ Title-page to Ruini, transl. Peter Offenbach, 1603: "Allen Chur/ Fürsten/ Graffen/ Herrn/ Ritttern/ Adeln/ Marstallern/ Rittmeistern/ Capitänen/ Obersten/ Bürgern/ Kauffleuten/ Roßkämmern/ Schmieden/ Mahlern/ Bildhäuern etc. zum nützlichsten und nothwendigem Gebrauch auffß fleissigst ins Teutsch gebracht [...]."

ing on a scientific aesthetic based on perspective and mathematical proportions, the artists' manuals reveal both a definitive trend in the art market and a particular challenge to the traditional education and training of artists. The craftsman's struggle to embrace the new technologies of mathematics as they penetrated his workplace and became part of his customers' expectations is given unique expression in these manuals as in no other sources. Although much can be inferred from their rules and regulations, guild records simply do not furnish enough information regarding art market trends in terms of style or regarding supplementary means of further training such as by reading. The equine health-care books demonstrate the strong influence not only of ancient but also of medieval epistemology on early modern science, and they highlight the broad range of those involved with horse care, from the farriers and stable-masters who actually treated the horses, to the university-educated physicians who translated ancient and foreign texts on the subject. The illustrations to these books indicate the crucial role played by the images in communicating notions not only about the scientific content of the text but also about the artistic content of the print. They also signal a differentiated readership, thus offering clues about the actual production and targeted dissemination of this material. In revealing all of this, equine imagery proves that it is a topic rich in potential historical insight. For the historian, the early modern horse is more than just a simple beast of burden; its historical role has not only been to bear the weight of physical freight but also of cultural cargo.